

JOURNAL

VOLUME 15 NUMBER 3

MARCH 1949

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PSCI JOURNAL

OFFICIAL PUBLICATION OF THE PHOTOGRAPHIC SOCIETY OF AMERICA

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Wity no photographers take, or make, pictures? There are many reasons, each good and sufficient to the individual photographer-and very much his personal busi-DESS

It is true that photographers do appreciate suggestions giving direction to their work. There is, however, a vast difference between making suggestions and establishing the premise that every photograph, and photographer, must serve definite purposes. Just about there, in fact, dictatorship sets

CRITICS OF salon photographs sometimes comment that the pictures are purposeless, the subject matter inadequate, photography drifting. On the other hand, paintings are judged as end products reflecting the thought and the work of artists.

CAUSAL FORCES are likely to be confusing. This photographer seeks to right a wrong; that one seeks an escape. Here a photographer records a fleeting moment from life; there one attempts to create beauty from materials inherently drab. This photographer discovers something of interest in surroundings otherwise drab; that one desires that others share a scene which impresses him.

PERIL MEWAYS attends the questioning of motives. Photographs, like paintings, reflect. the reaction of people to the world about them. Judges properly may question their vision, taste, technique, ability, or points of view. Yet subjects, purposes, the very reasons for creating pictures, remain personal rights to be respected -VHS

Our Cover

Our cover this month was taken by PSA. Jouenal's Western Editor, Jack Cannon, while on a vacation trip to Hawaii last year. While in Honolulu, he persuaded Urban Allen to write an article on Hawaii.

PSA CONVENTION

St. Louis, Mo., October 19, 20, 21, 22, 1949

WHAT'S NFW

By JACOB DESCHIN, APSA

Something new in cameras, the Vidax 214x314 outfit, is currently hitting the market. Its principal feature is the clever manner in which it combines the rollfilm and press-type cameras in the one unit-

Announced by the Vidmar Camera Company, 282 West 25th Street, New York City, the Vidax costs from \$267 to \$326, the price depending on the lens supplied. Without lens, the camera is \$192.50.

The all-metal outfit, which weighs 315 pounds, measures 278x51/x71/2 inches and uses No. 120 rollfilm or 214x314 sheet film in interchangeable backs, offers five original

Adjustable picture frame for 8, 12 or 16 exposures on No. 120 rollfilm.

A springback accessory, with focusing hood, that takes standard double sheetfilm holders.

A variable rangefinder instantly adjustable to lenses of 75mm to 127mm focal length.

The first rollfilm camera to combine a built-in rangefinder, double extension bellows, and interchangeable lens board

The Vidax has internal wiring designed to work interchangeably with various synchro shutters

The normal-lens choice includes the 101mm f/4.5 Kodak Ektar in Flash Supermatic shutter, or Wollensak Raptar in Rapax Synchromatic shutter, or the 105mm 1/3.7 Ektar in Flash Supermatic.

Other lenses are the 80mm f/6.3 Eastman wide-field Ektar in Flash Supermatic; 90mm f/6.8 Wollensak wide-angle Raptar in Synchromatic Rapax; 127mm f/4.5 Raptar or Ektar, in Synchromatic Rapax and Flash Supermatic shutters, respectively: and the 200mm (8-inch) (/56 Wollensak Raptar Telephoto in Rapax shutter.

Another highlight in the month's camera news is the Kodak Reflex Model II, which features a brighter ground-glass image and a new automatic film stop. The new Kodak twin-lens outfit was introduced recently at New York City's historic Camera Club, by Fenwick G. Small, of the Eastman Kodak Company. Equipped with a pair of matched Kodak Anastar f/3.5 lens, the camera sells for \$154.91, new-type field case included.

The improved viewing illumination in the reflex has been achieved by adding the new plastic Kodak Ektalite Field Lens beneath the camera's ground glass. This flat, grooved lens, which also is used in the Kodak Table Viewer and the Hasselblad single-lens Swedish reflex camera, increases the overall illumination on the ground glass 250 per cent, and edge illumination by 1,000 per cent, according to Kodak. The result is a uniformly lighted ground glass, which not only gives a brighter image but at the same time makes it possible for the user to look at the ground glass and see the whole image equally illuminated, without having to duck ones head around the corners of the glass.

Other features of the new camera, which



2.5 Kodak Aero-Ektar Lens

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takes No. 620 rollfilm, include a Flash Kodamatic Shutter with a new top speed of 1/300th second; new overall styling, and a new field case with hidden lightweight steel reinforcements. The latter are quite something, as they are designed to prevent the corners or sides of the case from, sagging.

The Czechs invaded New York City's Museum of Science and Industry recently with five new cameras ranging from one of those 16mm midgets to what they call the "smallest and lightest 8mm camera in the world."

The latter is called the Somet 8, measures 158x318x318 inches, and is equipped with a Mirar 1/2.8 lens. It takes sharply focused pictures from 715 feet to 30 feet at full aperture; 412 feet to infinity at

They are particularly enthusiastic about their midget, the tiny Mikroma, which measures 1.1x1.5x2.9 inches, and is designed for use with fine-grain 16mm movie film, which produces fifty snapshots to the roll. The film, in daylight-loading cartridges, will yield a negative size of 0.46x0.39 inches, or of 0.39x0.59 inches if the film is perforated on both sides.

The Mikroma has a 3-element f/3.3 anastigmat Mirar, with a focal length of 20mm. Shutter speeds are 1/25th to 1/200th, plus time. Other features: automatic counter; no rewinding of film; focusing range 18 inches to infinity. In softleather case, with slide fastener, the

Mikroma can be concealed in the palm of the hand.

Two other miniatures they showed are the Opema I and II, the latter with a rangefinder. The camera is equipped with Belar f/3.5 lens, shutter yielding speeds to 1/500th, and exposure-capacity of 45 pictures on a 35mm roll.

The Czechs also showed a twin-lens reflex, the Flexaret III, which takes a dozen pictures on a roll of No. 120 film. It has a taking anastigmat Mirar f/3.5, with 3.2 inch focal length in Prontor II shutter (speeds to 1/200th second), and a viewing anastigmat lens of 1/3. Reflex hood can be folded to permit direct-view operation

Additional information may be obtained from Milton Rubin Associates, RKO Building, 1270 Sixth Avenue, New York 20.

Movie Stuff

Three matched Kern lenses designed especially for the Bolex H-16 motion picture camera are announced by the American Bolex Co., Inc., 521 Fifth Avenue, New York. The lenses, a Kern Switar 1-inch f/1.4, a Kern Yvar 3-inch f/2.5 and a Kern Yvar 15mm f/2.8, all coated, may be purchased as a set or individually. The I-inch Switar, which shows all distances from 15, feet to 36 feet and infinity, has an ingenious and easy-to-read depth-offield gauge, which indicates the depth of field in sharp focus at the aperture for

(Turn to page 190)



MIDSUMMER SUNSET

Durward Dupont

From the Photographic Society of America 1948 Exhibition of Photography

Hawaii—LAND OF COLOR

By URBAN ALLEN

Illustrations by Jack Cannon, Western Editor, PSA JOURNAL

The problem of the photographer who visits the Hawaiian Islands is chiefly that of selection. One does not have to hunt pictures in Hawaii. They are at hand everywhere, crying to be taken. In describing the photogenic possibilities, however, one has to be on his guard—superlatives come so easily. Nowhere do land, sea and sky blend in more breath-taking color harmonies. And the people of Hawaii—a cosmopolitan assemblage from the four corners of the world, intermingling in exotic combinations—also provide picture material of infinite variety.

There are the stock postcard scenes, of course,—Diamond Head, the view from Nuuanu pali—a gap high in the Koolau mountain range, the tree ferns in Hawaii National Park, Haleakala Crater at sunset, Waikiki Beach, etc. But there are many other sights—and pictures—for the adventurous ones who will go off the beaten path.

Many visitors will first go to Oahu, where Honolulu is located. The downtown business district of Honolulu has a flavor of its own, and the Chinatown section, especially, will appeal to the photographer with a documentary turn of mind, or a craving for the exotic. Lei makers weave their flower strands in this area.

Steamer days are colorful affairs, with the lei women in solid phalanx offering their wares, and diving boys plunging into the water for coins. Then there are many fine residential estates around Honolulu, with flowering trees and plants of all kinds. In rural Oahu are farming lands where water buffalo may still be found. Sugar and pineapple fields stretch for miles. The fishing villages are always picturesque, and the fishermen good subjects, especially for color.

Active Volcanoes

In Hawaii—the "big island" of the group—the cameraman can shoot palm trees along Hilo Bay in the morning, and a snowball fight high on 13,800 Mauna Kea in the afternoon. On this island are the active volcanoes of Kilauea and Mokuaweoweo, the latter atop the 13,650 foot summit of Mauna Loa, the world's greatest mountain mass. In the Hawaii National Park are fern forests, unique lava formations, and a bird park that somehow has escaped the ravages of lava through the years to present an island of ancient green forest in a sea of recent lava.

This island is one of many moods, presenting rugged shorelines beaten by the incessant waves of the Pacific, and, in contrast, placid pastoral scenes where Parker Ranch cattle graze on the second largest ranch in America. Along its Kona coast are remnants of an ancient Hawaiian civilization, crowded but not obliterated by modern inroads, in the old fishing villages. There too, are the coffee plantations, where the rich Kona berries ripen under a tropical sun in the morning, and a clockwork cloud blanket appears just after noon each day.

The dominant scenic attraction of Hawaii's second largest island, Maui, is Haleakala, the world's largest dormant volcano. It is 21 miles around, and two huge gaps expose its floor to the swirling cloud banks that play hide and seek among its massive cinder cones—the largest of which is 1000 feet high. Sunrises and sunsets on Haleakala's summit are something beyond the power of words, but cameras have proved quite able in depicting them.

On Haleakala's slopes are the rolling pasture lands, and in its fertile valleys grow some of the best stands of sugar cane to be found. In fact, the territory's largest sugar mill—and one of the largest anywhere, is found on Maui.

The Garden Island

Then there is Kauai, the Garden Island, which lies at the northernmost extremity of the populated group. It is noted for three major attractions: the Waimea Can-



Fig. 1. The Royal Palms always captivate visitors to Hawaii,



Fig. 2. The catch gets quick attention on the old lava-flow.

yon, which is a Grand Canyon in miniature; Waialeale, one of the world's wettest spots (and it's a trick to photograph it because it is usually cloud-shrouded); and the Napali Cliffs, a rugged range of headlands that defy the surf and tradewinds and kick up a veil of spray in doing so.

But on all of the islands scenic grandeur is so compelling that it cannot help but border on the postcard type of subject matter. One artist, here on an assignment for Life Magazine, said: "Nobody will believe that water could be so blue"—and so it will be with color slides made in Hawaii. It is hard to believe that such colors exist—but they do.

Rainbows in Hawaii are magnificent—and that goes also for the rainbow of races. Every conceivable nationality, pure and in combination with others, may be found. Here are a few samples: French-Korean, German-Irish-Scotch-English, Portuguese-Hawaiian-Chinese, Japanese-Italian, Japanese-German, Hawaiian-Scotch, And the children of many of these intermarriages are more handsome than either of their parents. This is particularly true of the Caucasian-Hawaiian and the Hawaiian-Chinese blends.

In addition to the purely pictorial value of photographing these people, there could be much value in pictures as an anthropological record of the birth of a new kind of people. "The rainbow people of Hawaii."

Many Camera Clubs

Yes, there are a lot of photographers in Hawaii, and they have formed a lot of clubs, Oldest is the Camera Club of Hawaii, which makes its headquarters at the Honolulu Academy of Arts and is now undergoing a rejuvenation under the leadership of President Edward L. Ziesel, M.D. It is the biggest club also—having close to 100 members on its rolls—and is a member of the PSA.

The other major clubs in Honolulu, the capital city, are:

Nuuanu Y CC—which is tops now for production in the salon type of prints. Its members have been walking off with high honors in most of the island salons, and one of them, Milton Suzukawa, is particularly "hot" right now, having taken many major awards in recent months. Harry Iwata is president of the Nuuanu Club.

Beretania CC, with headquarters at the Jewish Welfare Board's clubhouse, is one of the most active clubs in the city and is under the direction of Sid Goldman. Both the Nuuanu and Beretania Clubs have large memberships.

Newest of the major clubs is Hawaii Color Pictorialists, which dabbles in the highly technical field of color photography. Heavyweight Fred Ishibashi runs this active group. There are many smaller clubs also around Honolulu.

In rural Oahu are four very active clubs—Kahuku, Ewa, Schofield and Kailua, with another group getting into its stride at Waipahu.

Well-known clubs on the other islands are Ka Hui Pai Kii in Hilo on the "big island," the Maui CC on Maui, and Kauai CC on Kauai. A year ago the larger clubs got together as guests of the Kauai CC and organized a Council, which is now affiliated with the PSA.

The CC Council of Hawaii, which recently observed its first anniversary, has barely scratched the surface of its usefulness. It follows PSA procedures pretty closely,



Fig. 3. Ancient hand-made mill for the famous Kona coffee

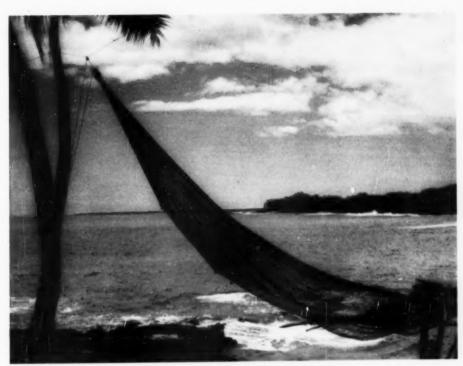


Fig. 4. Drying fish nets on the Kona Coast in the Hawaiian Islands.



Fig. 5. A young Japanese islander sits for his portrait. Fig. 6. A Hawaiian youngster against a fishing net.





Fig. 7. Camera club members enjoying one of their Sunday outings.

and its latest venture is a color slide portfolio. Next year, the Council may make as one of its major efforts the establishment of a clearing house to assemble prints for shipment to mainland salons. Up to now, Hawaiian photographers have been kept so busy with their local shows that they have not taken much part in the big international exhibitions.

There have been a few exhibitors who have had mainland salon success—Charles R. Frazier, Sr., ARPS, and David A. Muramoto, to name a couple—but the average camera clubber here is so busy filling monthly contest assignments that he never gets around to sending off his best work to the mainland shows. Each major club has a territorial salon at least once a year.

Big Salon Planned

Charles R. Frazier (of Lanikai, Oahu) is doing the spadework for Hawaii's first international salon, tentatively set for next January. It will be a full-dress PSA affair, with light box and all. The big problem will be to get "name" judges. The clubs here entertain a lot of "big names" in photography, but it seems they are never around when the judging is done.

Recently the local photographers had themselves quite an evening with Ansel Adams, who was out here taking pictures of Hawaii National Park. But it has been hard to get "speeches" out of many of the well-known visitors they operate on close schedules and can't find the time, or they have "contracts" with someone or other.

Boiling it all down, the state of photography in Hawaii is on the up and up. You can get just about anything you want in the stores. There are plenty of clubs to join, and lots of activities. But there is just one little fly in the proverbial ointment. Most of the boys are shooting the same old things over and over again, using the same old treatment.

As Ansel Adams said, after judging a show in Cincinnati: "But, I didn't see any pictures of Cincinnati." The local fellows in Hawaii aren't doing what they could to take pictures of Hawaii—real pictures of the real Hawaii, that is. But the new Council is going to try and fix that

Catkins for Color

THERE SHOULD be no blanks in the calendar of the ardent nature photographer. He should be able to find interesting material for his efforts at any time of the year. Even in midwinter there are snow scenes, winter sports, tree silhouettes and ice formations to shoot. After the last snow has melted, however, and the wild flower season has not yet arrived, there seems to be a gap which is difficult to fill. The Skunk Cabbage appears before the snow has all melted, but it may be weeks before any other early spring flowers appear.

Here catkins come into the picture. The earliest ones start developing with the first sunny days of early spring, and their season overlaps somewhat with the earlier crop of spring flowers. Their graceful forms and variety of colors offer a challenge Willard H. Farr describes a unique ana colorful photographic subject for the "lean season" preceding the arrival of early spring flowers

to the nature photographer, either for black and white or color photography.

A Neglected Subject

Catkins are a rather neglected subject, so before discussing the techniques of catkin photography, let us get a little better acquainted with this unique form of tree flower. The common types of garden flowers are what the botanist would describe as "perfect" flowers. That is, they possess all of the flower elements—sepals, petals, stamens and pistil, arranged in one self-contained unit. Such flowers use color, odor and nectar to attract insects for the purpose of pollination, and often incorporate some special device to cooperate with the insect visitors to insure the exchange of pollen.

Not so with the catkin, which differs from the "perfect" flower in two important respects. First, it is specifically designed for wind pollination. This means that it has neither color, scent or honey to advertise for insect visitors. Second, catkins are unisexual flowers. They consist exclusively of either staminate (male) or pistillate (female) florets.

Being wind pollinated, they appear early in the spring, before the leaves have developed and the insects are about. They are found only on trees or larger shrubs, and usually appear in the greatest profusion on the older trees and the upper branches, to facilitate the dissemination of their pollen.

Wind pollination at its best is a wasteful process, which means that an enormous amount of pollen must be produced and spilled into the spring breezes. This calls for a highly specialized construction of both the staminate and pistillate flowers involved, to insure a few grains reaching the stigma of the pistillate flower.

The staminate catkin is a very efficient device for producing and scattering pollen. It consists of a pendent festoon bearing a large number of tiny florets arranged in a spiral pattern on the stem. Each floret is merely a dense cluster of anthers (pollen sacks) with one little bract on the stem, but no sepals or petals. The staminate catkin is usually larger and showier than the pistillate one.

The pistillate florets include a stile with an enormous stigmatic (pollen receiving) surface, the usual ovary, and a single bract. In some catkins, such as the Willows and Aspens, these bracts are dense and hairy, giving the catkin its wooly appearance.

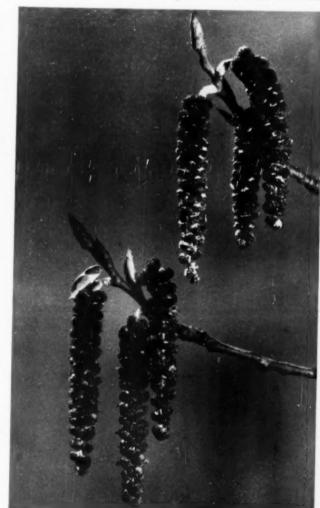
Most staminate catkins last but a few days until they have shed their pollen, and then drop off. Anyone who has a Cottonwood tree on their street is familiar with this phenomenon. The pistillate catkins stay on, develop inconspicuously among the growing leaves, and scatter their seeds later on in the season.

Another peculiarity of catkin-bearing trees is that the pistillate and staminate flowers are often borne on separate trees. For example, Poplars, Aspens and Willows bear both flowers in the form of catkins, but on different trees. In the Birches, Chestnuts, and Hornbeams, both are catkins, but appear on the same tree. In the case of Walnuts, Hickories, Oaks, Beeches, Alders and Mulberries the staminate flower is a catkin, but the pistillate one has the usual flower

form, usually in a close cluster, and both appear on the same tree. The Alders and Hornbeams form their catkins in the autumn, and they hang on the trees all winter.

Colors of Catkins

In colors of catkins, there are combinations to delight the heart of the color photographer. They range all the way through the spectrum with the exception of the blue-violet end. Everyone knows the "Pussy Willow", with its pure white tuft pushing out of its brown sheath. As it matures and the anthers develop, it becomes a golden yellow. The same color change is found in most of the Willows. Aspen catkins pop out of a reddish brown bud, and are grayish white and very fluffy when mature. Staminate catkins of White Birch are mottled yellow and brown, and hang long and graceful, while the pistillate ones, on the same branch.



COTTONWOOD CATKINS

Louise K. Broman



Fig. 1. Staminate catkins of White Birch are mottled yellow and brown, and hang long and gracefully, while the pistillate ones, on the same branch, stand almost erect and are a dark green in color.

stand almost erect, a dark green in

Hickory catkins are very long and graceful, bright green in color until they mature, and then bright red anthers peep out between the bracts. Ironwood and Alder catkins are a somber brown all winter but become much lighter in spring as they pollinate, tending toward yellow. Poplars have the showiest catkins of them all. In different species they vary through all shades of greenish yellow to a brilliant brick red when in their prime. Most pistillate catkins are an inconspicuous green color, and change very little in color as they mature.

Collecting catkin specimens for photographing is not easy. It sometimes seems that the best ones are entirely out of reach. A little search, however, will reward you with specimens on lower branches or smaller trees, or else some that you can reach from a fence or a sloping hillside. All this is a part of the challenge in this project.

Most staminate catkins are in the best condition for photographing before they reach the pollinating stage. Many varieties lose their brighter colors and become faded and dusty when in this condition. One exception is the Willow, which turns to a golden yellow when the anthers become mature. You must watch your specimens closely in order to catch them in the right condition. Sometimes a day or two may spell the difference between success and failure. A good scheme is to collect your specimens a few days before they are developed to the right stage for photographing, and then "force" them by keeping the twigs in a glass of water indoors. At this time of the year the twigs are so full of sap that, when forced indoors, they will develop as fast or even faster than they would on the parent tree.

It is not so difficult to catch pistillate catkins in the right stage for photographing. They develop more slowly, and change very little in color. The seed pods merely grow fatter as the weeks go by. A twig bearing pistillate catkins, in the stage when a few tiny green leaves are spilling out of the leaf bud on the end of the stem, makes a very pleasing composition.

Indoor Work Best

Catkin photography presupposes the use of a camera having ground glass focusing or its equivalent, since it is necessarily "close up" work, This also means that the work will be most successfully performed indoors. The comparative inaccessibility of the subjects, the annoying spring breezes and the difficulty of controlling lighting conditions, practically rule out any attempts at outdoor shots except under rare circumstances. Posing the subject indoors permits a careful arrangement of the composition, controlled lighting, choice of appropriate background, and long exposures at small stops for maximum detail. Catkins do not wilt quickly under the heat of spotlights as do some of the more delicate flowers.

Composition should be given as serious consideration in catkin photography as in any other field. It begins with a careful selection of your specimens. Take plenty of time to choose a branch bearing several well-developed catkins which form a pleasing pattern. Then support the branch in such a position that the catkins hang naturally and gracefully. Usually this will result in the branch entering the picture diagonally from either the upper or lower corner. If



Fig. 2. The individual seed pods on the pistillate catkins of Aspen are pearshaped and blue-green in color. They are bottle in dense clusters,

your equipment is capable of taking extreme close ups, you will find some interesting studies in the spiral arrangement of the anthers on the stem, or in details of the anthers themselves.

To simulate the effect of sunlight, place your main light rather high, with a fill-in light to prevent the shadows from being too pronounced. A third light may be used on the background, to bring it up to the desired tone. Another arrangement is to pose the specimen on the back porch or in a well-lighted room, using sunlight for illumination. Since direct sunlight would be too harsh. the specimen should be posed in indirect light, using a reflector to fill in the shadows. This arrangement gives soft and rather flat lighting. The best time of day for this work is midmorning or afternoon, depending on which way the windows face.

Color Shots

For color shots of catkins a rather flat lighting is preferable, such as the indirect sunlight described above. If using artificial lighting, use two lights—one on each side of the camera to eliminate shadows—with a third light to illuminate the background. For color work the choice of a background is highly important. It should be a harmonious color, which will set off the subject to good advantage.

For example, a piece of mounting board painted a pastel blue would be excellent, as it suggests a blue sky background, and blends well with the range of colors of your subject. Sometimes a pastel green will prove to be a good combination. Whatever color of background you select, be sure that no parts of your specimen merge into the background and become lost. In checking for your exposure it is advisable to take a reading on your background also, to make sure that it is sufficiently illuminated to balance its color with that of the subject.

If you are equipped for microscope photography, you will find pollen grains to be a very interesting study, as they present an infinite variety of forms. This is a subject in itself.

The season for catkins overlaps that of the early spring flowers. In fact, if you try to get all the later catkins, such as Walnuts, Oaks and Hickories, you will have something like two months of good shooting, and two busy months at that. At the same time, you will have learned a lot of interesting facts about trees and their highly specialized schemes for wind pollination.

Epstein and DeArmand. It is an excellent book written in simple laboratory style and adequately explains the actual working procedure for contact prints and enlargements, in addition to mixing solutions and constructing equipment. The 210 excellent photographs well illustrate their aim.

Julian Mack and Miles Martin

Julian Mack and Miles Martin wrote The Photographic Process to meet the need for a college text. It will give the sincere, advanced amateur a sounder understanding of principles and basic technique, than he will find in the more general works on photography. The last 50 pages comprise a laboratory manual of experiments which serve to coordinate the preceding theories.

An amazing wealth of information for amateur and professional photography is found in *The Complete Photographer*, a set of 10 volumes, edited by Willard D. Morgan. This is an excellent set and includes industrial, commercial, scientific, medical, documentary, home movies, composition, free lance and newsphotography. It is profusely illustrated, well compiled and practical.

Not the least of the amateur photographer's pleasures is the fun and fascination of constructing his own darkroom equipment. "Popular Science Monthly" has published How to Make Your Own Photographic Equipment, and Walter Burton has written Home Built Photo Equipment. These are both good, practical titles, with directions easy to follow. They have many illustrations and many new ideas for the amateur to put into practice.

No photographic darkroom is complete without an enlarger, and Joseph Lootens in his Lootens on Photographic Enlarging and Print Quality, shows the photographer how to use that enlarger which he has just acquired. The author was an authority on the enlarging process and his book introduces the amateur to that new world of photography seen only through an enlarger.

With the advent of the flash bulb some years ago, photography was completely revolutionized, and nothing has been done more to broaden its scope. This interest is increased

The Darkroom Bookshelf

By MARGARET L. PETERS *

"ALL THINGS come to him who waits, provided he has a camera with him and knows how to ase it. The world is camera-minded, and we live in a world of pictures." So says Fred Barton in his delightful and stimulating book Photography as a Habby. It goes without saving that every amateur knows to what extent photographic books and magazines increase the interest and pleasure of his hobby, and how dependent he is upon them for criteria, techniques, and news of the general photographic world. Thru them he is informed on professional as well as amateur subjects of interest, and acquaintance with the notables in photography can often be gained only through the literature.

This article is written to relate today's most outstanding books and periodicals on photography, any of which would be a valuable and practical addition to the photographer's own darkroom bookshelf.

The Fun of Photography by the Scacheri's will attract old and young, rich and poor, artistic and prosaic. It is a refreshing book which shows how the photographic hobby can satisfy the urge to create without long years of training. In the same classification may be put Jacob Deschin's excellent new book, Fun With Your Camera.

Camera Art as a Means of Self Expression, by Dr. Max Thorek, FPSA, is a beautiful work of personal experiences, theories and methods, by one of the finest internationally known amateur photographers. He emphasizes the gain in creating photographic masterpieces by control methods in order to achieve self-expression. It is a spirited book and includes the author's own experienced procedures.

The book by Miller and Brummitt, This 1s Photography, caused quite a stir in the photographic book world with its unusual approach in stressing the why and how of photography. It attempts to explain the means, so that the ends will mean better pictures. Many of the chapters include experiments which tend to increase darkroom enjoyment as well as photographic understanding and skill. A most satisfying book.

The beginner will prick up his photographic ears with How to Develop, Print and Enlarge Pictures by

^{*} Technical Librarian and Director of Microfilm Dept., Cleveland Public Library; Past President, Cleveland Camera Guild.

because flash bulbs are becoming more plentiful and because flash synchronizers are now being built into the newer cameras. Flash Photography by Gordon Parks and Flash in Modern Photography by William Mortensen are two books which point out the value of flash, and its correct application as used in every phase of photography. Both books have excellent photographs showing flash technique and its accomplishments.

Elementary Photographic Chemistry, written by the Eastman Kodak Research Laboratories, is for the practical photographer. The book is a simple account of the chemical processes that are such an important

part of photography.

We have a "new look" for the time-old problem of planning your pictures before you snap the shutter and of putting your images together so that the ideas and emotions you really want to express, will be in your finished picture. This is clearly explained and aptly illustrated in Image Management by Nicholas Haz, FPSA. Haz is internationally recognized as a photographic artist, painter and salon judge.

For the user of the larger camera, Graphic Graftex Photography, edited by Morgan and Lester, is the master book. It is a complete and thorough practical working handbook for users of the Graftex. Speed Graphic, and other larger cameras. It includes an elaborate index and excel-

lent illustrations.

Kodachrome and Ektachrome from All Angles by Fred Bond is a new book for the color enthusiast, which will provide a greater understanding of the glories and wonders of color photography. It is, so far, the only comprehensive work on Kodachrome and Ektachrome and will be a source of fact and inspiration to the color worker.

The Leica Manual by Morgan and others, is full of tested information carefully compiled for the Leica owner. This, its 11th edition, is proof of the pudding.

It isn't long before the photographic amateur passes the beginner stage and finds his interest tending toward isolated subjects. Whether it he bees or bridges, he welcomes any book on his current, special interest, And so, through the author Suschitzky, we have two outstanding, high quality books of this type. One is *Photographing Children* and the other *Photographing Lnimals*. Both are remarkable in photographic technique and unusual subject matter. The illustrations are actual photographic prints of extraordinary quality and interest.

A fascinating branch of pictorialism, especially for the beginner, is table-top photography, and many have been the fine creations of the illusion of reality by these enthusiasts. Table-Top Photography by Harkness and Draper include complete details for making many miniature set-ups.

Frank Fraprie, Hon.FPSA, and Robert Morris wrote Copying Technique for those who want to copy photographs, engravings, paintings, written records or the printed page. It includes the equipment necessary and the recommended procedure to obtain the best possible in photographic reproduction.

Photography plays an ever increasingly important role in engineering industries, and few indeed are the industries today which have been left untouched by the camera. It is one of the most reliable instruments available for the control of production, from design to finished product. Photography in Engineering by Tupholme, and How to Take Industrial Photographs by Zielke are two books essential to the industrial photographer. These titles are timely, including the high-speed, x-ray and infra-red applications.

Carroll B. Neblette, a photographic counselor and administrator, points out some of the possibilities of Careers in Photography. He stresses the need for competent photographers in the fields of scientific and applied photography, where the greatest advances are being made.

No list of books on photography would be complete without the Edward Wall Photographic Facts and Formulas. This book follows a long line of distinguished predecessors and is a response to a continuous demand for a work that will give, in convenient form, the essential facts and formulas constantly used in photography. It is not scientific, but is a working guide for practical photographers, giving plain working directions for the most commonly used processes. It has been revised and re-written by Franklin Jordan, FPSA.

By no means does the amateur photographer remain in the back-ground when it comes to selling his work, especially to magazines advertising for pictures on special subjects. The Universal Photo Almanac and Market Guide is an annual publication listing 'wants' in the picture field.

Every book collection on photography needs one title on history. The most complete work of this kind ever attempted is Josef Eder's History of Photography, translated by Edward Epstean. It is based on the earliest authoritative sources of our knowledge of physics and light and is a scholarly masterpiece.

Likewise, no hobby is complete without a magazine or two and they are the means of advancement and increased interest. At present, the five most important ones in this country are "Imerican Photography, The Camera, Minicam, Photographic Society of America Journal, and Popular Photography. All are written for the amateur except PSA Journal, which is both amateur and professional in its scope.

We, who enjoy being amateur photographers, want also to enjoy the wealth of photographic literature that is at our command. Through it we can still further attain the thrill of achievement plus the joy of creating, in one of the best hobbies in the world?

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BOOK REVIEWS

Photography Indoors, The Camera, 306 North Charles St., Baltimore 1, Md., 192 pages, 6 x 9½, cloth, illustrated, 83.50, 1948.

This fourth volume of the Camerette Photo Library presents informative articles by Dominic Chiesa, Grace Hooper, Gottlieb A Hampfler, Mark Mooney, Jr., and Norris Harkness on indoor photography, including still life, flowers, table-tops, copying, tricks, and other practical subjects. Both beginning and advanced photographers will find the instructions and suggestions helpful and provocative. Chiesa and Hampfler tell what every photographer should know about flower photography. Grace Hooper explains how to make photographic Christmas cards with a professional touch.

PRINCIPLES OF STREEDSCOPY, by Herbert C. McKay, American Photographic Publishing Co., 353 Newbury St., Boston 15, Mass., 191 pages, 6 x 9%, illustrated, doth, \$5.00, 1948.

Thorough exposition of the principles, practice, and applications of stereoscopy, which now gives promise of regaining its Victorian popularity. The first 13 chapters deal with choice and use of camera, exposure, development, printing, correlation of camera and viewer, and various systems of projection. The final chapters cover special processes and applications. The beginner in stereoscopy, as well as the advanced worker, can benefit by the step-bystep instructions which invite to progressive development of ability. Almost as old as photography, stereoscopy now can take advantage of color, which further enhances the three-dimensional effect of stereograms.

TIO YEAR'S PHOTOGRAPHY 1948-1949, The Royal Photographic Society, 16 Princes Gate, London, S. W. 7, England, 48 pages, 7½ x 9½, illustrated, paper \$1.75, cloth \$2.25, postpaid, 1948.

More than 40 reproductions illustrate this review of the pictorial, nature, lantern slide, record, and commercial sections of the Royal's 93rd Annual Exhibition. Pictorial photography is reviewed by W. R. Kay, nature photography by Oliver G. Pike, and lantern slides by Anne Jackson, all Fellows, American photographers will find variety in the subject matter of the illustrations and somewhat different attitudes in the comments. The reviewers disclose that only 7% of entered pictorials were accepted. scarcely 6% of lantern slides made the grade, and about 18% of the nature shots were found suitable for exhibition. Technical quality of prints is commended; otherwise photographers are said to lack imagination and to be satisfied with mildly interesting subjects.

Photo Handrook, Popular Mechanics Magazine, 200 East Ontario St., Chirago, Ill, 158 pages, 61, x 91, illustrated, cloth, \$2,00, 1948.

Thousands of helpfully practical methods, ideas, suggestions, and gadgets to be made at home appear in the pages of this volume, each enhanced by photographs, drawings, and diagrams. Since a thousand photographs

raphers can create more ideas than any one of their number, the book is a veritable treasure trove of how-to-do-its. For instance, run the lead of a soft pencil around the grooves of a film-tank reel to facilitate loading. Round the corners of cut film with a nail clipper to prevent scratches. When the toner bottle is empty, dunk the print in coffee to get sepia. If no spotlight is handy, a shaving mirror will serve. Etc.

CHILDREN BEFORE My CAMERA, by Adolf Morath, American Photographic Publishing Co., 383 Newbury St., Boston 15, Mass., 227 pages, 7½ x 10, cloth, illustrated, 85.00, 1948.

This experienced English professional shows, by means of 233 photographs, diagrams, and text, how he photographs children, gay and weeping, indoors and out. active and idle, singly and in groups. The text explains the whys, whens, and howsof child photography, with data on equipment, exposure, and processing. Especially helpful are series pictures, giving the reader a wealth of suggestions for what to do under given and controllable circumstances Technical data on lighting, distance, position, type of camera, lens, exposure, and development is balanced and amplified by information on how to get along with children. The author, describing both British and American practice, tells how to make story-pictures as well as portraits.

FRED ARCHER ON PORTRAITURE, by Fred Archer, FPSA, Camera Craft Publishing Co., 95 Minna St., San Francisco 5, Calif., 220 pages, 6½ x 9½, cloth, illustrated, 85.75, 1948.

Described by the author as a "simple manual of facts," this book comes as close to personal instruction by a qualified teacher as type and paper, halftones and diagrams, permit. Even when, necessarily, it deals with the technical aspects of photography and of portraiture, still the volume is inspired by human warmth, almost as if Fred Archer were there with the reader, urging him to try. Simplicity, practicality, and understanding embellish both text and pictures. Coverage of the subject is unusually thorough, including studio, equipment, model, posing and placement, lights and lighting, exposure, development, makeup, retouching, glamour corrective and creative portraiture.

YOSEMITE AND THE SIERRA NEVADA, with photographs by Ansel Adams, text by John Muir, editing by Charlotte E. Mauk, Houghton Mifflin Co., 2 Park St., Boston, Mass., 130 pages, 734 x 10, cloth, illustrated, \$6.00, 1948.

Two keenly observant men, one creative with words, the other with photographs, create this book, which combines the writing of John Muir, who travelled the mountain country a half-century ago, with the modern photographs of Ansel Adams. The media are happily complementary, Muir died in 1914, Adams began photographing this mountain world some years later, yet nothing in words is more accurately and completely descriptive of an Adams picture



THE SPIRAL STAIR-CASE

between encouragements to thinking are

than Muir's line, written about 1894; " A range of bossy cumuli took possession of the sky, huge domes and peaks rising one beyond another with deep canyons between them, bending this way and that in long curves and reachings, interrupted here and there with white upboiling masses that looked like the spray of waterfalls." Muir left no guide for amateur authors, but Adams presents copious photographic data explanatory of the technique of each of his 64 pictures.

A GUIDS TO PHOTOGRAPHIC CONTROL by Townsend Godsey, Duell, Sloan & Petrer, Inc., 270 Madison Ave., New York 16, N. Y., 200 pages, 6 x 9 ... cloth, illustrated, 84.00, 1948.

Four steps to successful control selection of subject, taking the picture, processing the negative, and developing the print, comprehensively are treated by the Director of Photography at Stevens College Helpfully, the author encourages the photographer to think, both before and after he clicks the shutter, and so to control ideas, equipment, chemicals, techniqueand himself that the resulting photograph clearly expresses what he feels, sees, or wants the world to feel and to see. In practical, time-tested, step-by-step instruc-

BETTER COLOR MOVIES, by Fred Bond, Camera Craft Publishing Co., 95 Minna St., San Francisco 5, Calif., 156 pages, 6 x 9, cloth, illustrated in monochrome and color, \$5.00, 1948.

This is a treasure-trove of readily digestible information for any photographer who works in color, whether with cine or still camera. The author's reputed passion for facts and know-how generously is shared with the reader, who will find himself painlessly acquiring an understanding of color, of the types of light and their effects on color, and of the relationships of color, light, and camera inherent in a wide range of subjects. The still photographer is told about those strangelylighted scenes which require additional exposure. There is a whole chapter for the edification of the legion addicted to photographing sunsets, and another chapter about how to photograph the girl friend by artificial light.

NETHERLANDS YEAR BOOK 1948-49 (NEDER-LANDS JAARBOEK VOOR FOTOKUNST) H. L. Smit & Zn. Hengelo, Holland, 148 pages, 9 x 12, board, illustrated, about \$4.00, 1948. (In U. S. from American Photographic Publishing Co., 553 Newbury St., Boston, Mass.)

American readers will experience no language difficulties in reading the excellent monochrome and color photographs selected by D. Helfferich, editor of the Dutch camera magazine, "Foto," from the best work of Dutch professionals and members of camera clubs affiliated with the Netherlands Association of Camera Clubs. The inherent Dutch skill in composition and layout seems to be instinctive also with Holland's photographers, and this volume presents many pictures which the amateur will recall as having been equally available to him, but which he ignored. Presented in this volume are pictorial, portrait, industrial, commercial, nature, color, and scientific photographs, yet each is so very much a complete picture as to defy typing

PSA Personalities

Byron H. Chatto, Hon. PSA

By JACK WRIGHT, FPSA

HE PITTSBURGH PRESS not long ago printed a full page of photographs by Byron H. Chatto. In connection with the page the Press said: "Byron H. Chatto is no newcomer to the photographic field. He has been making pictures ever since he can remember. In fact he got his first camera when he was a pre-school child and had to learn to read before he could use it."

With all due respect to the Pittsburgh Press, we would be inclined to doubt that last statement. So strong has been Byron Chatto's affinity for photography that we imagine he would have figured out how to use that pre-school camera even if the instruction book had been printed in Hebrew or Arabic!

Byron H. Chatto was born in Surry, Maine, in 1881. He graduated from the Maine Central Institute in 1901 and received his Bachelor of Science degree in electrical engineering in 1905. For two years he was employed by the General Electric Company at Lynn, Mass., and then he went to the Holtzer-Cabot Electric Company of Boston. In 1911 he went to work for the Westinghouse Corporation in Pittsburgh. He was employed by that concern up to the time of his retirement as an electrical engineer and industrial photographer a short time ago.

Retirement, however, is decidedly not the word to be used in connection with anyone as dynamic as Byron Chatto. He merely changed jobs. He is now secretary of the Academy of Science and Art of Pittsburgh, "an organization devoted to the advancement of science and art." One of his duties in that connection is to arrange a lecture course each fall, winter and spring which brings to Pittsburgh some of the most famous lecturers and travelers in the world.

"Now that I have retired from active work as an industrial photographer," Mr. Chatto said, "I find my interest turning mostly to Kodachrome movies and slides, probably because as program director of two travel lecture series I find an inspiration in knowing and seeing the work of so many of the truly fine photographers who bring travel lectures to us."

Mr. Chatto was one of the very few men who derived benefit from the great depression of the early 1930s.

"When industry was overtaken by the depression in 1930, a great many engineers were forced to find employment in other fields," Mr. Chatto "Our then manager of engineering, R. S. Feicht, who knew something of my work in photography and who could perhaps see something of the place which photography was destined to fill in industry, suggested that I might find a place in the company's photographic department. And so, on January 1, 1931. I became supervisor of photography at the East Pittsburgh Works of the Westinghouse Electric and Manufacturing Company.

Mr. Chatto's relationship with the PSA has from the beginning been an intimate and enthusiastic one. He was elected secretary of the Pittsburgh Salon in 1926 and served in



BYRON CHATTO, HON, PSA

W. O. Breckon, FPSA

that capacity until 1933, when he was elected secretary of the Associated Camera Clubs of America. In that year he was one of the leaders of the movement which reorganized the ACCA into the Photographic Society of America. He was the first secretary of the PSA and served in that capacity for six years. He started the PSA JOURNAL in 1935 and served as its editor and manager for the first year. The PSA owes a debt of gratitude to Byron Chatto that it will never be able to repay.

"I am very happy about the PSA," he said. "No organization has ever been more fortunate in finding capable, loyal men and women to fill its administrative offices. It has been my privilege to attend every National Convention and to see the Society grow from 145, at the time of its Convention in 1935, to more than 8,000 in 1948."

Mr. Chatto's photographic career has been as active as it has been long. During the past 30 years he has written much for the magazines and has done a great deal of teaching. He has spoken hundreds of times to camera clubs and has served on salon juries. He was elected an Honorary Member of the PSA in 1939. He is an associate member of numerous clubs and societies, including the Pittsburgh Salon, the Photo Pictorialists of Los Angeles and the Kodak Camera Club. He has been an active exhibitor and his pictures have hung in Salons all over the world.

Into every photographic organization and activity to which he has belonged, Byron H. Chatto has put a great deal of himself. As a result he has reaped from such organizations and activities a vast amount of happiness, satisfaction and success.

Them Was the Days-Part III

By Jesse H. Buffum *

The teen age of the movies was notable for its epochal inventions and the many independent producers of scenics and shorts

Not all the movies of the Golden Age of the cinema were made by the regular producing companies. These stuck to drama, comedy and westerns very closely the first few years. Out on the free-lance fringe of the business the making of "scenics" and "educationals" and commercial shorts went on at a great pace; and thus were many movie cameramen born. These, as a class, were quite without the pale; but their ranks produced eventually some of the best cinematographers. An outstanding example of this is Joseph B. Walker, now head of the Camera Department for Columbia Pictures, and a Technicolor expert. You saw his Jolson picture, of course.

Joe went to work for me as my number one cameraman when I went into making educationals. Gaumont was putting out a special weekly single-reel magazine of the screen, and that was my principal outlet. As a sample: We did an educational on water, taking a raindrop falling on a leaf up in the High Sierra, and following it down from a growing trickle to a streamlet, a creek, a river and on into the sea.—telling the story of the work it did and the pleasure it gave along the way. That was one of dozens we made.

Joe helped shoot Houdini escaping from a straight-jacket in mid-air. He set up in a window of a building opposite the suspended magician. I covered from below, and a third camera was trained on the escapee from the roof. The film was full length and was for the collection of Houdini himself. Clarence Drown liked the stuff so much that he set me making a film daily for his theatre—the first such in the world. Believe me, that meant work; but it ran a year or more. It bore the Pathé label.

First Filmed Operation

I made the first filming of a surgical operation in the United States and the world. It was a skin grafting case on a little Spanish girl. I was selected as the skin donor; but at the last minute up came a blood relative from Guadalajara, and that was better of course. But I photographed it on 35 mm. Being an intense lover of children I should have known better—I all but passed out when the surgeon scartified the little body before applying the "islands" freshly taken from her aunt's inner thighs.

And after all that, the Orpheum refused to run the scoop. I gave the film to the hospital.

In those days sound was having its birth pangs. I saw some of the trys. Most of them went the way of the poem entitled "An Ode to Oblivion." One of them I worked on for the inventor. Fred Blanchard, patron of the arts and a prominent California figure, was financially interested. My camera was chain-sprocket geared to a recording phonograph. Bill Alder, back from a photo expedition with Eddie Laemmle to New Guinea, had still another idea—the sprocket hole margin of the negative. Others galore dreamed and experimented.

Alertness to opportunity was the life blood of the freelance cameraman then as now. For example: Through my friend Captain Hall, who owned boats at San Diego, I learned that an off-shore island, Corpus Christi, owned by both Mexico and the United States, had been closed by mutual agreement during the First World War. Indeed, you could not leave the California shore by water for any purpose save by special permit during that

Corpus Christi was the almost unmolested rookery of myriad sea birds, and the home of the giant sea lion—what a subject for scientific filming! So for two long years and more I patiently waited—and at last the looked-for signal came. In a chartered ocean-going tug I went over, and came back three days later with some good stuff, and exclusive too—shots almost as good as you could get way down on South Georgia in another ocean.

Going back to pre-war, it fell to my lot to be the first filmer in Zion Canyon, beyond a few stills taken at the mouth of that natural wonder of Utah. The Salt Lake Railroad, with Douglas White as expedition director, went in for a six weeks' camping trek in an attempt to interest the federal government in the place as a national park. I was official trip photographer, making publicity stills for the Salt Lake and a movie for myself. Wiley of Yellowstone fame fed and tented us, and we had Mormon guides. An elder of the church and his wife and daughter shared their tent with me. The women and children, of course, stayed behind when we went in on horseback. Cliff dwellings 1500 feet up on sheer cliffs, natural bridges, scenery of sheer, rare beauty, and high adventure in rugged desert country—that was our daily fare.

^{*}Columbia Broad-asting System. In: Station WEEL Boston

Came my second trip to the Hawaiian Islands. On my first I had made it in a windjammer—28 days from San Francisco to Honolulu, with a major storm that broke loose our deckload, a dead calm way down near the line, and a half-crazy skipper who all but wrecked us. A year later he went to an insane asylum and the ship went to the bottom in mid-ocean.

This time I sailed on the biggest bottom on the Pacific, the Tenyou Maru, a Jap vessel. On board with me was Maurice Costello and his family. Little Helene and Dolores were great playmates for a long voyage.

Pearl Harbor

Several adventures befell me the three months I was in Hawaii that time. I was first to film Pearl Harbor, which we had just purchased; my movie camera broke down; and I fell in with Dal Clawson. What a pal! He borrowed an outfit belonging to Bonine, a local cinematographer; he dragged me into a human skull hunt in the tabooed caves of long-dead ancient Hawaiians; and as cameraman for a Universal producing unit there on location, he showed me what a bum photographer I was, and tried to make me a good one. Dal died in New York not long ago. He had been for years one of Hollywood's top cameramen—best in the business, along with Bitzer, Rosher and the like.

That Pearl Harbor affair was more than an incident. I little dreamed at the time that, 33 years later, I would again be photographing this great land-locked refuge (?) for naval ships, the first civilian photographer allowed in since the Jap attack. But then with naval clearance from Washington (obtained by General Leonard Wood, who was Chief of Staff of the Army at that time) I shot the first installation at Pearl—a great drydock slowly rising out of the water. Admiral So-and-So steered me, his gold braid always in the foreground. That night the whole thing sank, work of—get this—Japanese saboteurs, it was claimed. The Jap menace was already there in those islands—and noted—as far back as 1914.

Whatever I know of posing and draping the human figure for lens purposes, I learned at the feet of Ruth St. Denis, probably the greatest dancer America has produced. She and Ted Shawn had just thrown in together and were founding Denishawn. I did most of their photography for two or three years. Ted would never let me shoot him solo-he kept himself for his own favorite art photographer. But the Denishawn girls were my models whenever I wished. I used to take the pick of them to Santa Barbara with me, when I went to the estate of Franklin Price Knott, who retired a millionaire as the foremost miniature painter in the United States. His hobby was Autochromes, and I did the black and whites, our cameras side by side. I remember he and I worked all one day getting Ruth standing in a solid gold gown on a giant lily pad in his lotus pool.

Within the high Spanish walls of Denishawn were two novitiates, dreaming of the day when they could do what Martha Graham and other members of Ruth's senior career-class were then doing. One of these was Andre Bailey, a slip of fragile physical beauty, and the other Myrna Williams, better known as Myrna Loy. Andre became my favorite model for art studies, and I posed her



Fig. 1. Example of an art title background by Jesse H. Buffum,

often. Some shots I made of her were hung in the Pittsburgh and Los Angeles salons.

Myrna Loy's Start

Andre and Myrna had become great friends, and Myrna became a bit envious of her chum being my model. So Myrna wangled an invitation for one trip, getting Andre's mother—our chaperon—to intercede. Out on location Mrs. Williams came over and whispered to me that her daughter would like to do what Andre was doing.

I looked appraisingly at the red mane, the freckles and the big ankles. I didn't like the idea. But—why not? You never could tell. And besides, this lithe, 15-year-old girl had something rare: a sweetness, an innocence and a genuineness beyond price. So it came about; and later there was no Andre any more, just Myrna. Followed days and months of frequent posing, of trips with the Williams



Fig. 2. This picture, taken of Myrna Loy when she was 15 years old, has never been reproduced before in any publication.



Fig. 3. This is a scene from the first motion picture for which Mr. Buffum made art titles. 1917 was the year.

family in my car; of knowing brother David, even then an aspiring sculptor. They were wonderful days.

Myrna showed my pictures of her to but few. Her art teacher was one of the rare exceptions. This instructor was commissioned to do the fountain that was ordered for the front of the Culver High school. Myrna posed for the central female figure—because of the studies I had made of her, one being draped exactly as the sculptor wanted it. And, like in the story books, along came a movie director out location hunting, "I want that fountain," he said to his cameraman. Later, when shooting out the scene, he casually suggested that he would like to meet the model in the flesh. Which led to Myrna getting a five-year contract with Warner Brothers.

It was the heyday of inventions. They were speeding the making of better movies. During the Joe Walker hookup we were responsible for a few ourselves. We could freeze an object in mid air, or command a rolling stone to halt and take time out. Going into optics somewhat deeply, we contrived a lens that would oscillate with great rapidity, like the human eye, countless times during each exposure. Nice idea, but no one wanted it. It's upattic now, with some other world beaters.

There was one that promised to be something, however, and Joe and I took it to New York to show to Charles Giblyn, one of the more important directors. By merely pressing a button it went from a longshot to a closeup, without stopping the camera. There were two lenses, one directly over the other, losing only one frame in making the switch. Had it been patentable it could have been sold. But Washington reported too much interference from obsolete two-lens inventions that had not the slightest value and were long forgotten. It would mean endless litigation.

But Jack Wheeler, curious over the possibilities, ordered

me to Washington from Los Angeles, when he gathered his ace cameramen for Wilson's second inauguration. Jack had for years been chief of the White House Secret Service squad, and Mrs. Wilson asked him to film her husband's second triumph for her collection. Perched atop a high building, I shot the President now near, now far, by press-button photography as he rode down Pennsylvania Avenue. The report I got back was congratulatory. "It worked," wired Jack Wheeler. Then we five newsreel cameramen were called back to the capital again for the showing in the basement of the White House, with a President not 20 feet away.

Title Making

Title making was a branch of cinematography that became an art in its own right for a brief but important period—up to the universal adoption of sound. It fell to my lot to have a part in revolutionizing this department of moving picture making. Universal underwent one of its periodic upheavals of methods and policy, and I was hired to put in a modern title department. A special building was constructed. It is hard to be both modest and truthful in a case like this, but I wrote a short chapter in the rise of the film industry: I put motion into art title backgrounds. It had never been thought of, and never done before. In fact, I was selected for the job because I was advocating this innovation—and it got to the ears of the new studio manager of Universal.

My first step, after the building was completed, was to get two brand new, latest model, Bell & Howells—and Harry Kauffman, one of the most loyal and painstaking cameramen I ever knew. In a big Cadillac from the transportation department, he and I spent weeks and drove thousands of miles getting backgrounds in anticipation of scheduled pictures I knew were coming up. My idea was to build up a library, which in a year or two grew to thousands of filed backgrounds. The stills were developed and enlarged: the movie negative tape-sealed and carefully catalogued, waiting for double exposure. Universal's new art titles with motion in the background became famous over night.

Smoke spiraling from some woodland cabin; Douglas firs moving in a mountain breeze; the ocean's bosom heaving; mesquite bending before a desert sandstorm; cumulus clouds hurrying; drawbridge rising above a moat; shadows playing on a wall; statues coming to life in some formal garden - those were some of the possibilities that materialized. Bill Alder and Carl Laemmle's nephew came back from Papua with a full length scenic of primitives. So out on the lot they gave me - God bless the technical and props departments grass huts, south sea canoes, naked Mexican children who played around with prop human skulls, and a 16-year-old debutante from one of California's best families. She was greasepainted the precise Papuan brown her costume just what she wore in her hair. Such devices as that for animated title backgrounds.

There were two big names in art photography in those days out on the west coast. Weston and Fred Archer. Fred had never gone into the movies, but his lens skill plus cleverness with crayon and brush made me want him on my staff. There was a lot of that sort of thing to

be done; besides, the art sense was a rare thing among ordinary cine cameramen in those days. Archer's good taste in styling the difficult effects we were called on to produce, would be invaluable. At the time he was doing commercial art work. So I asked for and got Archer. And that was another forward step in the title-making business.

Sometimes it seems like long ago, sometimes like only yesterday. I am doing entirely different work today but still taking movies for my own pleasure. The vivid memories of people and things and places of the early years of the movies will always remain with me, though, and these scattered recollections have helped me to relive those all-but-forgotten days.

Television Photography

When making pictures of a television screen, the illumination on the screen can be photographed, provided the proper exposure is given. Since the tubes used in television sets vary from 8,000 to 15,000 volts, it is not possible to give definite instructions on the exposure necessary. However, in using film such as the Super-XX type of panchromatic emulsion, we suggest trying exposure times of 1.5 second to 1.5 second at 1.4 second at 1.4 s.

When making motion pictures of the television screen, it is practically impossible to get pictures of much value with a spring-driven camera. To make satisfactory motion pictures, the camera would have to be operated by a synchronous motor, which would be geared to drive the camera at exactly 15 frames per second. This would phase the camera with the image on the television tube and produce the best picture results.

The spring drive on motion picture cameras may start out at the beginning of a cycle operating at 17 frames per second and slowly taper off so that for a brief peried it is operating at 16, then 15, and may even drop to 14 frames per second near the end of the spring cycle. There might be a space of one or two feet in a complete winding where the camera is operating at exactly 15 frames per second and satisfactory pictures would be obtained.

If you still want to experiment in spite of this advice, you can do so by using Super-X Panchromatic Film and setting the camera lens at i 1.9. The proper exposure will depend a great deal upon the size of the television tube and the voltage at which it operates. However, the Super-X film has sufficient latitude so that a reasonable exposure should be obtained at [1.9. It is not possible to obtain satisfactory results with an f 3.5 lens.

It is not necessary to use any filter, nor is any extraneous light necessary or desirable. HARRIS B. TUTTLE, APSA

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OUESTION BOX

I live near a small lake where we do a lot of swimming in a diving helmet under water in summer. I have a 10mm movie camera with an f/19 lens. Could I make a waterproof box to hold my camera so that I can make movies underwater?—DRS, SNRAUSE, N.Y.

Ves, you can make such movies, but it is not easy. The most difficult part is making a box or waterproof container for housing your camera. As far as we know, there is no waterproof housing supplied on the market for this purpose. With the many different models of movie cameras, it would almost be impossible to supply such housings to fit each camera model.

In using amateur 16mm or 8mm movie cameras, one is confronted with the necessity of rewinding the camera spring 7 to 9 times during the exposure of a 100-foot roll of 16mm film. The average camera will expose 9 to 15 feet at one winding. In adapting a spring-driven camera for this purpose, attempts have been made to extend the crank or spring-winding shaft through the water-tight housing so that the camera spring can be rewound under water if desirable. This has usually resulted in failure, because of the difficulty of making a water-tight seal around the crank shaft and starting button.

The best amateur equipment we've heard about so far was a housing made of sheet copper with soldered seams. The glass window in front of the camera fens was set in waterproof cement. The top of the housing was gasketed with rubber and the top was locked into place with a lever type of clamp lock which held the top securely in place.

No provision was made for rewinding the camera. The spring was wound before the camera was enclosed in the housing. After running off 12 feet or so of film under water, the camera was brought to the surface, removed from the housing, and the spring rewound. This procedure was repeated until the film was exposed.

The starting button was made accessible

by leaving a 1½-inch circular opening in the metal housing in the area where the button was located. This was covered with a piece of rubber from a piece of old inner tube. The rubber was cemented to the copper and then squeezed water tight with a metal washer which was screwed to the housing. The rubber was not pulled tight across the opening but was left loose enough so that the camera starting button could be started by pressing or pushing it with the fingers, with just the layer of rubber protecting it.

I want to project movies on to my window from the inside of the house, so that they can be seen on the window by persons outside. Can this be done, and, if so, how should I go about it? — J.F.C., Curcano, I.L.

Yes, you can do this by using a translucent projection screen. Material such as ground glass, flashed opal, and similar materials, can be employed. Projection screen manufacturers formerly supplied translucent screens, but we do not know whether they are now available. You might write to a manufacturer and inquire.

The translucent screen material can be placed next to your window. If ground glass or flashed opal is used, the glass side should be placed next to the window glass, with the rough side facing the inside of the room.

It it advisable to build a hood out of cardboard or black cloth, perhaps a foot deep, on each side of the window and around the translucent screen. This is to shade the screen and prevent extraneous light from falling on either the front or lack surface. Such light will degrade the quality of the projected image and cause it to appear that and dim. The shading of such light from the screen will result in a contrastier and more brilliant screen image.

Place the projector on a stand or table and elevate it so that the center of the lens or projection axis is level with the center of the projection screen.

With the projector running without film, move it forward or backward, and at the same time fecus the projector aperture on the translucent screen so that the projected projector gate just fills the screen.

Normally your films are wound for proper projection on a reflection type of screen. Since the picture will now be viewed from the opposite side of the translucent screen, everything would be reversed from left to right when viewed from this posi-

(Turn to page 190)



MOUNTAIN PATH H. R. Thornton

FROM THE NORTHWEST PHOTOGRAPHIC SALON



SEAFARING IS NECESSARV Stanley Ralkowski

THE FOLIO



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SPEE SPEAKING

Sewell Peasine Wright Editor, THE FOLIO

The other evening, by happy chance, our CC had two shows to look at: a group of "Detroit glossies", and the Finnish International Exhibit. The contrast between the two was tremendous, as might be expected.

Print for print, before an American jury, the Detroit glessies would have fared much better, I'm sure. They were in the current American tradition: big, bold, close-up, wire-edged, blue-toned, and glossy. The Finnish prints were smaller and softer; many of them had a misty, far-away qualty that somehow was nostalgic in its appeal.

It's not up to me to say which group had the greater artistic content, but I came away with the feeling that we have much to learn from our friends across the seasjust as, undoubtedly, they have much to learn from us.

May I suggest that the next time a group of foreign prints comes your way, you not culy enjoy it for its own sake, but compare it with a representative group of American salon-worthy prints? I think you'll profit by the experience: I know I did!

We're just starting a Portfolio Camera Club here. I'll let you know later how it works out.

It looks mighty good so far!

Believe it or not, it's none too early to start laying your plans for the St. Louis Convention, October 19, 20, 21, and 22.

. . .

I don't know about you, but I've found that the only way to make sure of a thing of this sort is to work toward the objective for a long time. If you'll start now saving up the time and the cash, you'll be all set when the time comes.

And that St. Louis Convention, girls and boys, is one you shouldn't miss!

The Salarianal Portfolios

Keast Burke, B.EC, ARPS

Hon. PSA Representative for Australia; Editor, "The Australasian Photo-Review."

"I may as well confess from the outset, that my start in photography was made in just the same way as everyone else's—with a box Brownie. It must have been about 1907; I recall the occasion well. It was a Sunday ferry trip to Balmoral and the

first exposure was of Fort Denison, an island in Sydney Harbour.

" Photography at school was mainly in the direction of record work in connection with cadet camps and school sports, though there is one quite different association which stays in my mind. We had the pleasure of a visit from a well known photographic demonstrator from an enterprising photographic stock house. At the conclusion of the lectures, he offered a prize of a folding metal tripod for the best genre picture. This was rather a difficult assignment for school-boy photographers, but I decided to tackle it and accordingly carried my father's highly prized half-plate Thornton Pickard "Royal Ruby" de luxe Field Camera two or three miles down the road to where stood the shed of one of the last of the wayside shoeing-smiths. I duly set up the camera, persuaded the old farrier to pose and gave about ten times the correct exposure. A very flat print resulted, but fortunately, it was sufficient to "collect" the folding metal tripod.

"While cameras of various kinds were carried on holidays and walking tours. serious photography was not commenced until 1912, when I became possessed of a No. 2 Stereo Brownie. My father had always been keenly interested in stereo work and this camera not only simplified stereo photography, but had the advantage that one image was very suitable for lantern slides by contact-another form of photographic technique with long family associations. The Stereo Brownie was carried on a holiday (in 1912) to the Southern Alps district-incidentally our homeland of the Southern Island of New Zealand. On this trip, special attention was paid to the technical aspects of glaciers and other geographical and geological formations. These negatives were afterwards requested by the late Professor Edgeworth David for lecture lantern-slide purposes

"During World War I, I was fortunate in serving in an area where the carrying of cameras was permitted. This was in Mesopotamia and North West Persia, and the photographs there secured proved useful for National War Memorial records and for the Unit History, "With Horse and Morse in Mesopotamia", which I subsequently edited, as well as for a series of lantern slides.

"In the 'twenties', my chief interest was in the direction of the motion picture. The emotional capabilities of this medium were only just beginning to be intellectually and artistically realized. I accumulated a fair library on this angle and became an office bearer of The Film Society of those days, only to come to the realization that the making of motion pictures of the type I had in mind would necessarily be too much for a single individual, and so I once

again turned my attention to 'still' photography. I began to send to overseas salons, but the small percentage of acceptances tended to indicate that my choice of subject matter was hardly strong enough for overseas tastes, and this turned my thoughts to a subject that has since become my favorite: the male figure study. After a little concentration on this idea. I was gratified when a figure portfolio made an appeal to the honours committee at the Royal in 1941.

"My personal views on pictorial photography are fairly generally known, but will perhaps bear repetition. As regards one's own work, I consider sincerity should take first place—one's photographs should represent one's own personality and never an imitation or a following of some current fashion. Keep an open mind with regard to the work of others, studying it carefully and duly assessing its value.

" Concerning subject matter, endeavour to maintain a fresh, lively outlook, and a bold confident approach; be determined to make the most of every subject that presents itself. At the same time, do not neglect to have one subject up your sleeve to which you have given special thought and at which you can, perhaps, hope to make yourself a master. You may find this advice more or less essential if you are thinking of sending pictures in support of an Associateship application to the Royal or PSA. I have a feeling it is more or less essential that any work submitted in these directions must definitely show unity and individuality and that a miscellaneous group of photographs is unlikely to receive much serious attention.

"As I finish reading over what was to be the concluding paragraph of these notes. I was startled to note that I had left out the most important point never fail to put technique at the top of your personal check list. Only when you have reached that stage when impeccable technique has become automatic can you afford to take any liberties with it."

In personal letters Keast Burke gives further insight into his life and interests. Referring to his portrait, he says; "You'll find the portrait herewith, but please look after it as it has some sentimental interest, being one of a group made by the late Dr. Julian Smith. Hon: FRPS, just prior to his death. He exposed quite a large number of negatives on several occasions, but unfortunately, he did not regard any of them as 'salon timber' and so, to my great regret, there are no salon prints of 'yours truly' bearing the famous initials. However, I have his first proofs and this is one of them.

"Included along with this you will also find a few biographical notes (see biography above, Ed.) that I penned for a local magazine. Unfortunately, over recent years, my photographic interests have been swallowed up by the needs of organization and administration, which is all very nice and self-sacrificing, but does not get you very many pictures.

"I carried a 55mm on a recent II day good-will trip to our Irrigation Area, way outback (Griffith-Mildura). It was a

International Portfolios

There are openings in the following PSA International Portfolios for Pictorial Division members who are interested in interchanging prints for comment and analysis with the leading photographers in foreign countries:

First Egyptian-American Second South African-American Fourth India-American Fourth Canadian-American Second Swedish-American Second Australasian-American Second French-American Third Colan-American First Anglo-American Medical First Netherlands-American First Setherlands-American

For information write to Director of International Portfolios, Mr. Ray Miess, 1800 North Farwell Avenue, Milwaukee J, Wisconsin.

business trip and very hurried, but I was happy to find I was still pretty keen and that my hand had not lost its cunning. Of course, I just had to demonstrate to the locals that an Editor could still take photographs."

To Frances Robson, Associate Editor, The Folio, he writes in part: "Our PSA activities seem to be on the up and up and it would appear as though we shall have to duplicate ourselves in order to keep up! Most of the First Portfolios) are known to me personally, and the organizer of the Second Circle has asked me to join, to which request we shall probably agree: we should take our own medicine, you know."

Upon being asked about the "Australasian Photo-Review," of which he is Editor, Mr. Burke says: "Of course, it is sold below cost: that happens because the Journal is by way of being a courtesy or good-will gesture on the part of Kodak



KEAST BURKE Portrait made by the late Dr. Julian Smith, Hon FRPS, just prior to his death. The original is a first proof, greatly prized by Mr.

Australasia to advanced amateurs in its territory. It is not generally intended for export.

"The Journal is a labour of love, as far as we are concerned, thanks to the happy cooperation of our employers, Kodak Australasia. We have been rewarded by a fine following in this country of great distances, where camera club membership, or even contacts with the larger centres, is impossible for many.

"Besides editing the Journal, we are doing what we can in the way of circulating portfolios, exhibitions, and one-man-shows. Two of our shows, one colour and one general pictorial, are already in PSA hands. But there is so much to be done, and so little time in which to do it!"

('So say we, all of us.' F.S.R.)

Writing in the August 1948 "Australasian Photo-Review" under the title of "International Portfolios Cover the World." Mr. Burke says: "Incidentally, we understand that R. Gregory (25 Lillimur Road, Ormond, Victoria) still has some vacancies in the First India-Australasia Portfolio Circle; this should prove a most interesting activity for advanced workers."

(R. Gregory, ARPS, formerly of Gorakpur, U.P., India, was a member of the First PSA India-American Portfolio before he returned to Australia. He will be the Australian General Secretary of the India-Australian Portfolios. Dr. G. Thomas, ARPS, APSA, of Bangalore, India, Secretary of the Sirst PSA India-American Portfolio, will be the Indian General Secretary of the India-Australian Portfolios.— BURRION D. HOLLEY.

"At long last, by the July sailing of the Vention, to the PSA went the First Over-sea A.P.A. Invitation Salon, duly export-licensed, customs-stamped and customs-scaled. The circulation will be arranged by the General Secretary of PSA International Exhibits, and it is anticipated that the first showing will be in Detroit, from where a return collection is on the way. Arrival of the return group (from the Detroit Guild) is being cageily anticipated."

One of the prints from the A.P.-R. In-

One of the prints from the A.P.-R. Invitation Salon was reproduced on page 39 of the January PSA JOURNAL.

The Second Canadian-American Portfolio

RENNIE I. WEBER & FRANCES S. ROBSON

Four Canadian-American Circles are now "going concerns" and are on circuit. But it was not until the Canadian prints of Circle 2 came into the hands of Mrs. Frances S. Robson, American Circle Secretary, that the idea came to her to copy these prints all on one film, for a portfolio record. Belonging to nine portfolios, this record-keeping idea assumes major proportions, but her steadily increasing book of composite prints is its own compensation. Succeeding composites of the circle prints in different circuits will indicate members' progress, as nothing else would Illustrated is a composite of the prints in the Canadian Portfolio of Circle 2

The Canadian members of this circle,

even as the American members, live in widely separated parts of the country, from Vancouver, B. C. to Montreal, P. Q.; while the Americans are stationed from New York on the Atlantic, to California on the Pacific coast, and many points in between. It takes quite a while for the Portfolio to circulate in either country. But we are all becoming acquainted and with each round, find more in common, and more personalized interest in each other.

Through PSA JOURNAL we would like to introduce to you our "Opposites" as well as ourselves, through short biographies of each member, as well as by the composite pictures of both.

Canadian members of Circle 2 are an

interesting group.

Dr. L. G. Saunders, ARPS, has been Professor of Biology at the University of Saskatchewan, Saskatoon, since 1925. Born in London, England, in 1895, he came to Canada in 1912, studied at the Agricultural College at Truro, N. S. and at McGill University, then returned to England for four years at Cambridge.

A PSA Two-Star Award Winner, he does some portraiture, but is particularly interested in pictorial photography in all

forms, and natural history.

Being no purist, he will use any means necessary to achieve pictorial results. He gave bromoil a thorough trial and obtained acceptances, but has discarded it in favor of paper negative, for major operations. As a second string to his bow, he paints in watercolor and makes lino cuts. He considers that the practice of each helps the others, through increased artistic perception.

Color especially interests Philip J. Croft, of Leaside, Ontario. He began working at it in 1930, and developed a three-color subtractive process for color lantern slides He has since worked with the various coler processes and has made successful prints by the Carbro-Chromatone and Dye-Relief

He was a founder of the Montreal CC in 1932, was president in '35 and '36, and was elected an honorary life member in '41. At present he is vice president of the Toronto CC.

He is chief engineer of the Canada Wire and Cable Company.

The member from London, Ontario, Harold W. Donahue, is famous in both Canada and the US, as a sales convention speaker. His conventions are models of smoothness and clock-like precision. He is an advertising and sales consultant, editor of "The Toastmaster's Manual" now in its 7th edition. He is Director of the London Chamber of Commerce and of the London Retail Merchants' Association, past president of International Affiliation of Sales and Advertising Clubs, past publicity chairman, Kiwanis International for Ontario. Quebec and the Maritimes. His services are in constant demand, as a pleasing and forceful speaker.

Sam L. Edelson is in the jewelry business in Ottawa. Being a watchmaker helps in keeping his photographic gear in shape, He belongs to the F-11 Camera Club (11 members), a group without fees, rules, red tape, but an organization which func-



The Canadian Prints from the Canadian-American Portfolio, Top: "The Carpenter's Son," Philip J. Croft: "The Staircase," Alison Dickison: ", and Silent Pool," H. W. Donahue, Middle: "Tee Gremlins," S. L. Edelson; "Young Girl," P. S. Gregory; "Rhythm," C. W. Hunter; "Shore Leave," Paul Moisan, Bottom: "Micromegas," Dr. L. G. Saunders; "Westward Ho," O. W. R. Smith; "Winter Sunset," H. L. Waddle.

tions because of the members' sincere desire to improve their work through frank criticism.

When confronted with the request for his biography. Philip S. Gregory, of Montreal, P. O. modestly replied that this presented some difficulties, because, while he is an enthusiast, he is not a salon exhibitor. He did admit being an engineer, and vice president of a large hydro-electric power company. He has been interested in child photography for several years.

Harry L. Waddle is manager of Waddle's 5¢ to \$1.00 store at Port Dover, a village on the north shore of Lake Erie, which boasts having the largest fresh water fishing fleet in the world. Photographic interests are

American prints of the First Swedish-American Portfolio provide a program for the members of the Gothenburg Camera Club of Sweden.

naturally influenced by harbour and lakefront activities. He makes semi-monthly trips of 40 miles to attend the Hamilton CC, of which he has been a leading exhibitor, and this year its president.

Starting in photography about 1935 with a medium priced miniature camera, it is still his only camera for black and white work. He believes that if equipment is kept as simple as possible, it is more likely to be available when needed. He is most interested in pictorial work in general, with an eye to increased salon success

Being a salesman for Berkel Products Company, C. W. Hunter, of Vancouver, B. C. is a very hard man to find. We have been on his trail for months, and only now has he come home to find his mail and

the request for his biography.

In his travels he has more than average chance to shoot landscapes and outdoor pictures. He claims he "takes a lot and hopes to get a few." He uses a 214 x 314 film pack camera with range finder, because it is fast and convenient. He and his wife collect prints, have them framed and put on display where they can look at them and "hope someday to do as well."

Oliver W. R. Smith, of Toronto, Ortario, is a comptroller by profession. Before 1942, for some 25 years, he has been deeply interested in world-wide pioneer aerophilately, editing handbooks and catalogues on same. About ten years ago he became attracted to Budgerigars (Australian Para-



VEILED DAWN

Dr. G. Thomas

keets) and as a hobbyist, has devoted considerable time specializing in improving the breed, especially in regard to new colors.

He took up photography seriously in 1942. It has supplied a much needed outdoor activity. Anything pictorial claim-his attention. At first working in monochrome, he now is graduating to color. He has dabbled in several control methods, but liking the simple way of life, finds that control by diapositives gives best results, casier. He is a member of the Toronto CC, PSA, and the Royal.

The Secretary of this Circle is placed last, fort she is a very important member of the group. Miss Alisan Dickison, of Ottawa, is Secretary of both Circles I and J. Her photographic interests deal chiefly with landscapes, especially farming scenes and old pioneer homes. She hopes to master the control processes and feels there are pictures everywhere, given the proper lighting conditions.

Golf occupies a great deal of her spare time during the summer months and in the aginter, she enjoys outings on skis.

(The concluding part of this article on the Second PSA Canadian American Porttolio will appear in the next issue of TheFe(ba).)



Prints have recently been received by Wm. V. Sminkey (former Director, PSA International Exhibits) from Denmark. sponsored by the D.K.P. (Danske Kamera Pictorialister) and destined for exchange with the Photo Pictorialists of Milwaukec. Wisconsin. The man responsible for the assembling of this exhibit is H. B. J. Cramer of Copenhagen, Denmark. President of the D.K.P.

Mr. Cramer has sent much valuable information about various contacts in his part of the world, and his letters are extr mely interesting. From them we glean the following information about his life and interests. He says

I am a kind of a teacher—in the Copenhagen School of Commercial Science—I understand that higher commercial education in your country is in the hands of the Universities, so I suppose my American opposite would be a profession—Besides, I am assistant editor of a monthly periodical. Manders Blad.—(Men-Magrainer) which I can only describe as something of a cross between The New Vorker.—Esquire—and Fortune, with a small photographic department thrown in But, using to paper restrictions, we are down to its pages on miserable paper, and only one photocophic article a month.

caping article a month.

I am also a reader in a publishing house and an author in a small way. As you will understand from the time I have been excupied with photography, I am not a very young man. I have already seached my fifties.

India Exhibit

A set of 24 prints was received the first of the year from Dr. G. Thomas, ARPS, APSA, of Bangalore, India, representing the 1949 Portfolio Circle. This association was formed by members of the International Portfolios in India in order that they could enter the International Exhibits activity of the Pictorial Division.

Acting as Secretary of the organization, Dr. Thomas collected 24 of the best prints his members had to offer. Represented are such well-known print makers as A. K. Syed, P. K. Patel, D. C. Engineer, T. Ka-mak, etc.

This set of prints was sent first to the Akron CC at Akron, Ohio; after which it will be viewed and commented on by three more clubs in that area. From there it will go to all the clubs in the Cleveland area, after which it will be available to other PSA clubs wishing to view it. The set of American prints, sent to Dr. Thomas from Akron, will be viewed by all the clubs to which the members of the 1940 Portfolio Circle belong, as well as being placed on public display.

Four representative prints from the India Exhibit are reproduced herewith.

If your club would be interested in seeing this set of India prints, or any of the other foreign print exchanges now in this country, write to Dr. Glenn Adams, Director, PSA International Exhibits, 9 East Third Street, Cincinnati 2, Ohio.



Portfolio Notebooks

The rules by which each type of portfolio is governed are published in the notebooks of these portfolios. When a portfolio arrives we are concerned, and rightly so, with the pictures, the commentaries, and the new notebook entries, and we do not review the rules. After all, we read them once. There are, however, a few points which members seem to overlook or forcet.

First is change of address. Remember that if you change your address, please notify the director of your portfolio and the secretary of your circle as well as PSA Headquarters in Philadelphia.

Another point that may need clarifica



YOUNG MR. HARDY S. D. Contractor

tion is the renewal of your membership in a portfolio. Many are vague as to when their membership expires. Don't worry about it, you will be notified. When you receive a blank send your renewal directly to your circle secretary or portfolio director. Do not send it to Philadelphia.

The last point we wish to make here is in regard to portfolio correspondence. Whenever you write concerning a portfolio or portfolio membership always list your portfolio circle for quick identification.

From the Notebooks

Frequently notebooks have entries which are of general interest. It is in the porttolio notebooks that questions are asked and answered. Of interest this month is an entry by D. Ward Pease, APSA, commentator of Pictorial Portfolio No. 13

In one of the comments I said something about a varnishing formula. I believe that all of the prints which I have had in the portfolio have been varnished with the stuff that I will describe. When a print comes out of the wash water, it

When a print comes out of the wash water, it has a futer, rich appearance which seems to get lost somewhere in the blotters. Ferrotyping a glossy print puts this back and also adds a specular reflection or glare which brings with it SPIRAL STAIR-CASE a few unwanted tiens such as your own face, the bight in the cetting or the windows across the room. A good variishing restores the wei print sichness after the property of the state of the state

richness without bringing in the glare.
This varnishing can be done before or after mounting. I have been told that a varnished print would not stand the heat of a dry mounting press, but I have had no trouble with either the press or an electric iron with the formula given below. Varnishing after mounting requires that the mount be thoroughly protected. I have used a large "I." shaped piece of an old mount used a large held successively against each corner of the print This varnish formula has been used extensively

around our club for several years and its origin has been ascribed to both Harry Shigeta and Sam-Silverstein. It is as follows

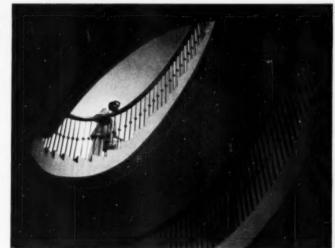
one part (by volume) Conal varnish ome mart Benzol (or benzone) but not benzine) In a marris

All are artist's materials obtainable at an artist's supply house rather than the neighborhood hard-ware or paint store. The proportions are not critical. I mark off five approximately equal spaces down a straight sided bottle and write. Turps across two of them.

oply the varnish with a pad of soft lintless



A TIBETAN BOY H. E. Tyndale PSA JOURNAL, Vol. 15, Mar. 1949



T. Kasi Nath

other out of the rag drawer at home. Check the evenness of application by booking across the print toward the light. By applying the varnish liberally and rubbing no more than is necessary to assure an even coat you will get the nearest approach to a glossy print, and one that will take the longest to dry. If a less shiny finish is wanted, use a second cloth to wipe much of the varnish off and rule it out smooth. Stand the print up in as dust free a place as you can find until it is dry. This takes a while, 48 hours or more with the heavier application of the varnish but the results are

Maybe I should add that the "or more" can run up to almost a week if a really heavy coat is applied. The good services of the vanish is to cover over some types of spotting which are inclined to show at certain angles. This does not apply to pencil spotting as that rubs off in the varuishing operation. Brush spotting with water colors works best for me.

There are many good varnishing and waxing solutions and formulas. The above is a good one and is used by many serious workers. Varnishing may be that little something extra to help you win that medal. Remember, a nice varnish job will not make a good print out of a bad one but will help many prints, even the best

Portfolio Personalities

This is the first of a series of character sketches of people we have all met. People who are members of every portfolio. People who are members of every camera club. Introducing

MR. M. Q. TUTHERWAY

Mr. Tutherway is probably a middle aged engineer although he is liable to cropup in any profession or trade. To him it is a rare photograph indeed that would not be improved by the simple expedient of reversing the negative and making the picture face t'other way.

If the road leads in from the left, in this case it would be much better if it led in from the right. If little Rollo is looking toward his right the only thing you need to do to guarantee 87% acceptance in salons is to reverse the negative and have him looking toward the left.

Now to some of us literal souls who print our pictures pretty much as we saw them it is sometimes difficult to understand why this simple little device is a cureall. Seriously, it is not a cureall but Mr. Tutherway does have a point although it is not applicable in every case. The philosophy behind reversing a negative runs something like this

Since nature is not organized to be put down on a piece of 14 x 17 paper, it is an even bet that a road which runs from lett to right would look better in a photograph if it ran from right to left. If a tree is on the right of your particular viewpoint the odds are even that it would look better t'other way.

It is still quite possible that the better composition is gained by printing it exactly as you took it. But it is well to remember that Mr. Tutherway has a point. Don't forget the possibility of reversal. It will work more often than you think

Medal Awards

For the third time we announce a Porttolio Medal Award winner from Springfield, Illinois. This time the winner is genial Judge Benjamin S. De Boice, of the Probate Court of Springfield. The wanning print, which is reproduced herewith, was 'Milkweed." This print was accepted and hung in the First Illinois State Fair Inter-national Salon in August 1948. The print had previously travelled in PSA Pictorial Portíolio No. 41.

The picture was taken on Super-Pan film. exposed under artificial light for one second at f/22 and developed in Microdol. The print was made on Indiatone, developed in Ansco 103. It was dipped in ferro-cyanide reducer momentarily to snap it up.

Just a little sidelight on the Judge—his favorite hunting grounds—with camera, that is—are New Salem and an animal farm not far from Springfield. At the latter place, he has been known to enter a cage of lions in order to secure a picture without the bars of the cage interfering. He is a student of Lincoln lore and history.

There are still a number of Portfolio Medals yet to be awarded, so if you are eligible and have not as yet made a try for them, there is no time like the present. Past issues of PSA JOURNAL have carried the requirements. If you cannot locate this information drop a line to the Director, PSA American Portfolios.

P\$A Portrait Portfolio No. 11
Georgy Merrit, Jackson, Mich
John Matis, Jr., Cleveland, Ohio
Pennis Fett, Rochester, N. V.
Walter, J. Arrufat, Ringhamton, N. Y.
George E. Huffalen, Far Rockaway, N. Y.
John P. Frey, Bellefonte, Pennis
George W. Triglett, Cumberland, Maryland
Jay Mré-arland, Petroleum, W. A.
Mre-Marion B. Perry, Burbank, Fla.
Mre-Marion B. Perry, Burbank, Fla.
Mre-Marion B. Perry, Burbank, Fla.
T. Hill, Dallas, Fexas
James M. Hess, Fuello, Colo
Paul R. Helbig, Minneapolis, Minn.
Rudsliph Valuch, Usero, III
P\$A Pictorial Portfolio Circle No. 54

Rudsiph Valuch, Chero, III

PSA Pictorial Portfolio Circle No. 58

Pr. Norbert J. Roberts, Rochester, Minn.
Raymond C. Stoler, Eugene, Oregon
Frank A. Enezder, Human Creek, Calid.
Line B. Brown, Stillwater, Okla.
Line B. Drown, Stillwater, Okla.
Lines K. Johon, Marietta, Georgia.
John P. Frey, Beilefomte, Penna.
Heury J. Mahlenbrock, Feaneck, N. J.
Dr. Louis I. Abelson, Woodmere, N. Y.
Robert Weatherby, Middletown, Ohio
Mrs. Elizabeth D. Johnson, Kalamazoo, Mich.
Don R. Aufderbeide, Indianapolis, Indiana
Miss. Carlyne Schienle, Springfield, III.
Frank H. Sunjson, Chicago, Illinois

PSA Pierorial Poertfolio, No. 59

Frank H. Smyson, Chicago, Illimos

p. SA. Pictorial Portfolio. No. 59

Raiph M. Asherati, Macouth, Ill.

Bill Brown, Payette, Idabi

Hal Carver, Medfood, Oregon

Charles F. Weldman, San Francisco, Calif
F. Weston, La Jolla, Calif
Frames, Earle, Jr. McComb, Miss.

J. L. Tyler, Jr. Fairdax, S. C.

Joseph G. Barnett, Newark, N. J.

Bernamin Thomas, Nashau, N. H.

Jak Cos. Bellevine Chio.

Jak Cos. Bellevine Chio.

Lew W. Miller, South Bendt, Indiana

Mrs. Helen M. McChelland, Wilmette, Ill.



MILKWEED

B. S. De Boice

PSA American Portfolios

Enrollments are now being accepted in the following specialized portfolio groups:

Pictorial Portrait Nature Photo-Journalism Control Process Star Exhibitor Color Print

If you are interested in joining one or more of these groups, drop a card to Eldridge R. Christhilf, APSA, Director, PSA American Portfolios, 5819 N. Ravenswood Ave., Chicago 26, Illinois, and information and enrollment blanks will be sent you.

PSA Pictorial Portfolio No. 60
Art H. Oehl, Winnerka, Ill.
Roy E. Cole, Belott, Wis.
A. F. Kuhn, Austin, Minn.
A. F. Kuhn, Austin, Minn.
A. F. Kuhn, Austin, Minn.
L. F. Ling, Minn.
L. Filler, Delano, Calif.
L. City, Iowa
Ir., Josa R. Baker, Ontario, Oreson
Mins Evelva, Letts, San Francisco, Calif.
Paul Fielder, Delano, Calif.
Cliford C. Walkey, Pacific Palisades, Calif.
Mrs. Hazel Crowe, Austin, Texus
J. C. Jerry Derbes, Jackson, Mississippi
M. Q. Wilson, Springhill, Alabama
Lt. Col. Lewis D. Erwin, Augusta, Georgia
Dr. Alton D. Brasbear, Richmond, Va.
Mrss. Ruth Hare, Newark, N. J.
Nag Kash, Cartisle, Ky.

Nag Kash, Cartisle, Ky.

PSA Pictorial Portfolio No. 61

Dr. C. F. Wohlrabe, Mankato, Minn.
Joseph Dana Roberts, Seattle, Wash,
Clyde F. Roed, Compton, Calif.
Usedey D. Marshall, La Verne, Calif.
John R. Baldwin, Baytown, Fexas

N. M. Norton, Forrest City, S.A.

N. Norton, Forrest City, S.A.

N. M. Norton, Forrest City, S.A.

N. M. Norton, Forrest City, S.A.

Willard, C. Cartisles, Chattanous, Fenn,
Martin Seibel, Chattanous, Fenn,
Martin Seibel, Newark, N. W.

John P. Verus, Liberty, N. Y.

James H. Nasser, Washington, Penna
Alfred Hammett, Cleveland, Ohio
Mired M. Rabendunst, Cincinnati, Ohio
Mired M. Rabendunst, Cincinnati, Ohio
Mired M. Rabendunst, Cincinnati, Ohio



It is an extreme pleasure to be able to announce the appointment of three new Pictorial Division officers.

H. Jack Jones, of the Alabama Department of Agriculture and Industries in Montgomery, Alabama, will be the Pictorial Division's new Director of Membership. Active, energetic, and enthusiastic about the Pictorial Division's many new services to its members, "you all" will soon be hearing from Jack. If you want to write him, his address is \$15 Dexter Avenue.

Because of the press of his work and his duties as Director of Publicity for the Pietorial Division. Lewis T. Reed has found it necessary to resign as Associate Editor of The Folio. Appointed to take his place as The Folio's "News." Associate Editor. W. Dovel LeSage will take over in the April issue. Many of you will remember Dovel as a leading exhibitor and author on photographic subjects.

In addition to his duties as the new Director of the Pictorial Division's PSA International Exhibits, Dr. Glenn Adams, of Cincinnati, Ohio, will also be the Associate Editor on The Folio for this activity. In the future you will be hearing more from Dr. Adams about foreign "pen-pals" and the course of the International Exhibits in their journeys among the camera clubs in U.S.

BURTON D. HOLLEY, APSA, Chairman

Salon Records

By FRANK ROY FRAPRIE, HON. FPSA

The following exhibitors, who are members of the Photographic Society of America, had 30 prints or more accepted in 47 salons already listed, which are: Atlanta Dixie. Memphis. Combined Societies. Lititz. South Shields, Midland, Muncie, Salzburg, Edmonton, Falmouth, Vancouver, Reading, Luxembourg, Denmark, Antwerp, Prague, Cape Town, Royal, Puvallup, Western Ontario, Louisville, Ukiah, Springfield, Ill., Columbus, Nottingham, Pasadena, Houston, Trail, San Sebastian, Evansville, Victoria, Windlesham, Gent, Detroit, Minneapolis, Chicago. Photographic Society of America, St. Louis, M. V., Chile, Hong Kong, Argentina, Charleston, Bangalore, Omaha, Lincoln, Sao Paulo and Albany,

	Salons	Print:
Mrs. Jean Elwell	44	127
Frank R. Fraprie	46	127
Cecil B. Atwater	41	112
Harold Lincoln Thompson	41	97
Jack Wright	3.3	93
Carl Mansfield	36	91
David J. Stanley	3.2	37
Miss Eleanor Parke Custis	3.0	85
Moreland M. Beaderick	2.5	5.2
Alfred Watson	3.1	77
Axel Bahnsen	25	75
Frank J. Heller	4.4	71
H. R. Thornton	.29	59
Jose Ottitica, Filho.	-34	67
Miss Doris M. Weber	24	6.6
Wood Whitesell	2.8	63
Allan Len Horvath	.26	63
Earle W. Brown	17	61



JUDGE BENJAMIN S. DE BOICE

R. Winquist	20	61
Wallace J. Stevens	2.5	60
Kanti A. Patel	26	51
Francis Wu Jon Delton Dodds	2.5	51
Joh Delton Dodds	15	5:
Erno Vadas	18	5
Rev. Boyd A. Little.	24	5
Vernon G. Leach		5.
G. L. Weissenburger		
	23	5:
Merrill W. Tilden	- 29	53
Dr. Carrol C. Turner	19	41
O. E. Romig	20	47
F. Eliot Westlake	2.2	43
C. J. J. Schaepman	24	41
Mrs. Irma G. Haselwood.	20	40
Harold Elliott	24	46
Mrs. Mildred Hatry	1.3	43
Harry L. Waddle	2.9	4.5
Miss Betty Parker Henderson	19	43
J. W. Galloway Karl Pollak	2.2	40
Kari Poliak	14	41
Theodore L. Bronson	19	41
Dr. Alver J. Olson	21	41
Dr. William F. Small Dr. R. Raymond Lapelle Shirley M. Hall	21	41
Dr. R. Raymond Lapelle	15	40
Shirley M. Hall	1.3	34
Dr. Tibor Csorgeo Lewis T. Reed	16	35
Lewis T. Reed	15	35
Dr. J. O. Fitzgerald, Jr.	26	31
Ernst Schwitters	18	37
Helen G. Manzer A. Aubrey Bodine Bernard G. Sülberstein	10	37
A Aubrey Bodine	10	36
Bernard G. Silberstein	11	30
Bartley H. Arbing	1.1	33
Miss Fugenia Buxton	1.8	35
Dr. Maurice Van de Wyer	21	
Mrs. Grace M. Ballentine	19	34
Jose Echague Ortiz		33
Dr. Glenn Adams	16	33
K. F. Pesak	10	3.3
Mrs. Sarah Martin	14	32
Antonio Rosa Casaco.	1.5	
Thomas J. Newett	11	31
Altred Blyth	14	31
Emil L. Hinrich	17	.51
Clarence C. Ruchhoft	1.3	36
Leon Craig Forgie	15	30
Jozsef Seidl	. 18	30



By Louise Broman Janson 6252 S. Kedzie Ave., Chicago 29, Ill.

Members of the Nature Division committee are gathering together the best prints and color slides available for the Division's permanent collection which will be ready for circulation next year. The material is being assembled in sets pertaining to eight specific subjects: Birds; Insects; Animals (Not Domestic): Reptiles, Fish, Frogs; Flowers; Other Botanical Subjects; Geology, Astronomy, Meteorology; and Miscellaneous Subjects. If you have material which you are willing to contribute, please contact Louise Broman Janson for further information.

Flowers That Never Open

It may sound like a contradiction in terms to speak of flowers that never open, but nevertheless such a phenomenon actually does exist. The botanist labels such flowers "Cleistogamous" which means "having enclosed fertilization." Since these freaks do not employ the usual process of insect fertilization they have no need for showy petals, scent, or nectar. In fact, insects could not enter them if they tried. They are usually bud-like in form, with rudimentary petals, few stamens and a dwarfed pistil. Being self fertilized, there is no necessity for the flower to ever



open. On the other hand, pollination is insured by the flower remaining closed.

One of the common examples of this habit is the Purple Violet. The cleistogamous flowers appear on a short stem just at the surface of the ground or sometimes actually under the surface. Milkworts bear cleistogamous flowers on subterranean branches. Touch-me-not and Oxalis bear small inconspicuous bud-like flowers on the same stems as the perfect ones which never open, and are self-fertilizing.

Cleistogamous flowers are very fertile, and produce an abundance of seed. It would seem as though the plant employing this method of propagation did not trust the usual methods, and so takes no chance on them

As far as the nature photographer is concerned cleistogamous flowers are a total loss, unless it might be purely for record shots.—W. H. FARR

Ways of the Winds

In early spring the wind reaches greater force than at any other season of the year. The warming of the land causes a turbulance in the air that does not occur in autumn which is a cooling process. The month of March is typified as the stormiest of the year and is therefore an excellent time to take pictures illustrating high winds. Although wind cannot be seen, its effects are noticeable by trees bowing earthward, clouds scudding rapidly across the sky, waves beating ceaselessly against the shore, and dust storms carrying away the top soil.

Wind is defined as air in motion and is caused by differences in atmospheric pressure which occur from contrasts in temperature. The heat of the sun causes air to expand and become lighter so the pressure falls. When air is cooled the opposite results; the air becomes denser and the pressure rises. The flow of air is from regions of high to areas of low pressure, and the greater the difference in pressure the more rapidly the air moves as wind. Winds are retarded by friction and those high aloft travel faster than do the surface winds, which are slowed by their encounter with hills and hollows, mountains and valleys, fields and woodlands,

In the northern hemisphere wind has a constant tendency to turn to the right and in the southern hemisphere to the left. This deflecting force is caused by the rotating motion of the earth on its axis which turns the cardinal positions beneath the moving air.

Land gains and loses heat much faster than water so that there are great contrasts of temperature between the continents and the bodies of water which surround them. Nevertheless, the wind systems of the world are fairly constant.

Beginning at the equator there is a low pressure area of light winds or dead calm known as the doldrums. Here the air rises and there is little horizontal motion.

To the north and south of the doldrums the trade winds blow. There are five trade winds which are characterized by their regularity or steadiness along the same course year after year. The trade winds extend about one-third of the distance to the north and south poles on both sides of the equator. The counter trades are the return branches of the trades and travel above them but in a different direction.

Winds from the westerly points of the middle latitudes flow eastward and are known as the westerlies. They occur in both hemispheres.

At the two polar areas of the globe the winds tend to blow from easterly points and are known as the polar easterlies.

The five trade winds and their corresponding counter trades, the two westerlies, and the two polar easterlies are sometimes known as the planetary winds. This name is given them because they originate from two planetary conditions: the rotation of the earth around the sun and the resultant difference in temperature of the tropical areas and the polar regions.

The monsoons are another class of winds which are known for their constancy of direction and season-long duration. The Southwest Monsoon brings rain to India after the dry winter months.

In mountainous regions there are special circulations known as mountain and valley breezes. The mountain breeze occurs at night and is a collection of chilled air that runs down the mountain side and gathers in the lowland. The valley breeze is a daytime wind and is caused by the heating of the cool air in the valley which flows up the mountain.

Land and sea breezes are also local cir-

culations. During the day the warmer att over the land rises and cooler air from above the water comes in to take its place causing a sea breeze. In the evening this condition reverses, the air over the water is warmer and as it rises, the air from the land takes its place resulting in a land breeze

A chinook wind melts fields of deep snow in a few hours. This is caused by a mass of warm moist air moving toward a mountain. When it reaches the mountain it rises. As it cools in its upward climb condensation occurs causing rain to fall. By the time it reaches the top it has lost its moisture. As it drains down the opposite side the temperature increases rapidly but it does not pick up moisture. At the time the original level is reached the wind is warmer than it was when it began the ascent. As if by magic the dry, warm wind consumes vast areas of snow bringing the brown earth to view

Hurricanes or tropical cyclones are char acterized by strong winds directed spirally inward around the area of lowest pressur-They are accompanied by dense clouds, violent flashes of lightning, and heavy rains. These winds usually occur during August

and September.

The smallest, most violent, and destructive et all storms is the tornado. Its life seldom exceeds an hour and its path covers less than a thousand feet in diameter and 25 miles in length. So great is the pressure within the whirling, twisting, funnel of a tornado that few objects can withstand its tury. Ternadoes come during the spring and summer many of them occurring in the Mississippi Valley.

Wind is an important factor in Nature's plan. It is an active force in the transportation of materials rain, sand, and soil In the plant world some trees, flowers, and grasses depend upon it for pollination while others use it as the means of dispersing seeds. Both bird and man have learned to take advantage of the winds in the thrilling

adventure of flight.

Coming Nature Exhibitions

Ird Michigan at Crashoook Institute (De-tion). March 21 Apr. 19. Deadline Mar. 14. Color and monochrome, entry for \$1.00 m each. Forms from Roger E. Richard, 1832 X. Gulley RA, Deadlorn Mich.

Forms from Roser S. RA, Dearborn Mich. 11th Buffalo at Ruffalo Museum of Science. May 12 fune Juli, Doubline May 14. Prints and slides. Exits for \$1.00 for each. Forms from Emily Zurbrick, Buffalo Museum of terms. Buffalo, N. Y.

Photo-Journalism

By CLIEF EDOM, APSA 18 Walter Williams Hall, Columbia, Mo.

Les Linck, a member of the St. Louis Past-Dispatch photo staff, is local chairman of the photo-journalism convention committee and already is hard at work on planfor the October PSA Convention.

A class of embryo photo-journalists recently drew up the following "Ten Com-



UP IN THE AIR

Matthew Zimmerman, AP

From University of Mo

mandments for the News Photographer" 1. Thou shalt know what pictures are news-

Then shalt not by guilty of unsportsmanlike

conduct in thine caserness to get a picture 3. Thou shalt not abuse thy photographic equip-

Thou shalt honor the profession of Journalism.

Thou shalt honor truth. Thou shalt not break faith with thy readers, mor with the editor.

7. Thou shalt not shoot pictures of juvenile lawlineakers, if doing so will damage their reputa-

invite acts it toning so it damage on a cylindric tion and render no service to society.

S. Thou shalt not intentionally use cambid photography to belittle a person or besmitch his character. (Do unto others as you would that they should do into you!

Thou shalt be a careful craftsman on assign-

ent and in the darkroom.

10. Thou shalt think clearly at all times, realiz-

ing you, tather than the camera, makes the picture

Bits About 'em:

Bill Stapleton. Miami Herald photographer, is 27 years of age and has been in the business since 1937. He was photographer with OWI from 1942 until 1944, serving in Africa. Sicily and Italy. Later he was a Signal Corps captain. (photographic operations officer) at Headquarters, U.S. Army, in Honolulu. He returned to the Herald in 1947

Hans Mary, who shoots many sea pictures for the Baltimore Sunday Sun, has an intense love for the ocean-and for ships. He trains his camera lens seaward whenever

he has the opportunity

Al Monteverde, popular cameraman with the Los Angeles Examiner, has spent 14 of his 35 years in the photographic business. He has done portrait, commercial, syndicate and news work, and for three years was in the Pacific area as combat photographer in the U.S. Marine Corps.

Bert Emanuel. Detroit Free-Press. cameraman, has won seven national photographic awards this year. He is a blackand white and color man, and handles news

and rotogravure assignments.

Robert Boyd, Milwaukee Journal staffer. writes "I like to see pictures that show the ingenuity of the photographer. The pictures where the cameraman was lucky and happened to be all set when the car did a roll over has its place, but I only have one lifetime to wait for one like that to come along. But I still keep my camera ready. just in case."

Stan Calderwood, Boston UP photog rapher, does free-lance work on his day off, and has a lot of fun doing it His version of an ideal assignment is to "roam for a syndicate-doing reporting or picture work, or both, as the occasion demands."

Edward J. Feency, sports photographer with the Chicago Tribune, modestly writes; "Ever since my knee-pants days. I've been a terrific sports fan, which at times hampers my work. Whether it's Notre Dame and Army, the World Series, the Bears and Cardinals, the Arlington classic. or just a plain high school basketball game. I get so steamed up during a close contest, that I often forget to press the shutter release. Covering hundreds of sporting events throughout the year, the time may come when I will become a little blase about sports, but up to now, some of the best action is missed because I forget to press the danged button."

Two publications, the "National Press Photographer" and the "Press Photog-(of New York), have recently rapher " carried articles about news cameramen being beaten while attending to their duties-that of recording the news. In Cincinnati assault and battery charges were filed against a man who attacked a photographer while he was taking pictures at the scene of an accident ... At Rome, Ga., a photographer for the Rome News-Tribune was beaten by pickets at a textile plant . . . a cameraman equipped with an electronic flash unit was "given a caning and ejected" from a horse show in Madison Square Garden. Press cameramen the country over are doing much to eliminate such unfortunate incidents.

Camera Club

By H. J. JOHNSON, APSA 1614 W. Adams St., Chicago 12, Ill.

The camera club in the small town is definitely handicapped in a number of projects which clubs in larger cities can handle with ease. One of these is the international photographic exhibition. For one viewpoint of the problem of the small town club with the big town show, we are presenting an article by one who is directly acquainted with details of that problem.

BEWARE, THE INTERNA-TIONAL "SALON" By Leslie W. Rimes

Many an old hand has advised the newly-formed small-town club to prepare for a "salon." It'll give you something to work on, they say. Generally, they do not qualify the word "salon." Now, the word "salon " to the newly-formed salon committee of the newly-formed camera club means: "an exhibit like Pittsburgh or Toronto or Rochester or San Francisco stages each year."

That's natural. Photographic magazines vie with one another for the biggest "salon" section, picturing prints that have hung in the top "salons" of the continent. Furthermore, the new club starts off as enthusiastically as a kid with a new Brownie. The club wants to do big things—like Chicago or London or Baltimore.

But, let's look before we shoot.

Let's take a look at the rise and fall of the Trail, British Columbia, "salon."

I was one of the group of six or eight fans in the smelter city who lined up a small "salon" six years ago. We advertised the event around our district and got a lot of pictures of all shapes and sizes; some in focus, some out; some over exposed, some under. We hired the biggest and best hall in town for four nights. We hung everything!

Topnotch "salon" judges would have ground their teeth to pulp. But we had over a thousand people pay two-bits to see the show. And Trail boasts a population of only 15,000.

There were several reasons why the show was received so enthusiastically.

1 Everybody in town knew Jimmy Vipond, exhibition chairman, and Mickey
Brennan, farmed Smoke Eater hockey
player, and Les Rimes, Gib Kennedy, and
the rest. Our stuff wasn't the best on the
continent, but it was the best in the district,
and people wanted to see what we could
do. They hadn't heard of Frapric or
Shigeta. "Why Jimmy Vipond is the best
photographer in the whole world," you
would hear them say.

2. The people liked seeing the local scenes. Christina Lake, Rossland ski fields, the Columbia River. This was the country they knew and loved. Show the average man a print of Mauna Loa, the work of a camera artist with FRPS and FPSA after his name, and he'll remark. "Yes, very nice. It's a mountain, evidently in the tropics. Say, I'd sure like to see a picture of some of the mountains around here. There you'd really have an eve-opener."

Show him the local mountain, done by one of his neighbors a few blocks away, and he'll laud it to high heaven!

3. The people liked to see what could be done with medium-priced equipment, by ordinary men who worked alongside them in the smelter or who served them across the counter in the local fruit store. "Yeah," they say of the great man's print, "I'll bet he has a dozen Leicas and a million dollars and does nothing but go around the world taking snapshots!"

The next year we were a little more fussy about what we hung. We named three local judges. We, ourselves, were improving. News of our show had gone farther afield. But, it was definitely a local effort. Over 2000 paid their quarter that year to see the "salon." It became the social event of the year. The show was declared open by the mayor, and the radio station staged a remote control broadcast from the exhibition hall.

The Nelson Camera Club came over in a body to see the show; some of them were represented among the accepted prints.

So it went. There was plenty of enthusiasm. But, each year, one or two of the committee members called for an "international salon." The argument was that if we didn't see the work of the big namphotographers from all parts of Canada and the United States, we, the committee, would grow stale.

Last year I flew over from Kimberly to see the Fifth Annual Salon. It had now become "international", advertised in all the photographic journals, and run according to rules. Among the exhibitors were F. R. Fraprie, Sam Chow, V. A. Leach, W. D. LeSage, Dr. Marinus, M. W. Tilden, and others. Few local exhibitors could compete.

The general public was not enthused.

One of the members of the executive callet me from my hotel room to write a bit or the local paper lauding the show, as it was on the very verge of going in a hole, financially. Still the public didn't respond.

This year, I didn't bother going to Trail. I received a second hand report from Harold Sudlow, a PSA'er from Nelson. Said Harold:

"I'm disappointed at the results. To me, the idea of a 'salon' in a place like Trail is to foster interest in camera art among the good people of the town. Burnham, of Trail, presented the only two local prints nothing else from Trail or the Kootenays.

"Of a total of 60 exhibitors, there were 12 with degrees. This to me is all right for the Vancouver Art Gallery, but for a local show, NO.' To me, an exhibition is to encourage the 'younger' camera fans and to give them the incentive to do better next year. In the field, I am a greenhorn, and I'm looking for a bit of incentive to produce better results, but I am sure there are many who, like myself, would say, 'I'm not capable of competing with the class so my work is not wanted.' I am afraid we are not getting the results we should when we allow 'professionals' to dominate the scene."

In the big cities, it is different. You have sufficient advanced shutterbugs to draw an audience.

What has been the result of Trail's entering the international exhibition field? Even the enthusiastic committee members who cried aloud for some better competition were evidently scared, or gently pushed, out of the field. Perhaps they have now de-

cided they will make better baby-sitters, and the Kootenays will be the worse for their loss. The general public did not respond, and the demand now is "Show us what can be done right here in our own back yards."

It is true that by limiting the show to a local, the enthusiasts don't have the opportunity to see what people in other parts of the world are doing. And that is a factor worth considering in a somewhat isolated city like Trail. But, the PSA Camera Clubs: print circuits, the Color Division's slide circuits, and the Pictorial Division's portfolios do fill the need, bringing to the more advanced amateurs an idea of what others, beyond the rim of horizon, are doing to further the photographic art.



By Rev. Herman Bielenberg, APSA 3 Pearl Avenue, Oil City, Penna.

Foreign Slide Sets

This month the Holland and Australian slide sets are on their way home after touring American clubs since last fall.

The two sets were viewed by 36 clubs and the Australian set was projected at one of the Color Division programs at the PSA Cincinnati Convention.

The Holland set of 50 slides was assembled by J. Akkerman, secretary of the Netherlands Amateur Photo Societies League, and also a member of Color Division. He obtained the slides from various affiliated clubs in the League, The set was well liked and various letters of appreciation were forwarded to Mr. Akkerman.

The Australian set was composed of slides by Clarence B. Young, ARPS, APSA. There were 200 slides in this set, assembled in travelog sequence and presenting the city of Sydney and surrounding area. A representative opinion of these slides was that of the Dayton CC: "Members of the club felt that as a whole, it is an excellent collection. Mr. Young has enhanced available subjects by unique lighting and good composition. The slides were inspirational and enjoyed very much by all members of our club."

Since Color Division affiliated clubs have a priority in the scheduling of the foreign sets, announcement of the next sets will appear first in the Color Division Bulletin.

Club Slide Circuits

Erik Sorensen reports that entries have been received from 35 clubs in the Club Slide Circuit competition. Two circuits are underway at the present time.

Club Slide Circuit 49-A includes the following: Salt Lake City Photochrome; Sussex, Newton, N. J.; Racine, Wis.; Halifax, N. S.; Toronto Camera Club; Carboloy Camera Club, Detroit; Lima, Ohio; Fine Arts, Evansville, Ind.; Glens Falls, N. Y. and National Photographic Society, Washington, D. C.

Circuit 49-B includes the following:

Aurora Y.M.C.A., Aurora, Ill.; Evansville, Ind.; Oval Camera Club, New York City; Chambersburg, Pa.; Kalamazoo, Michigan; Sioux Falls, S. D. YMCA; Chromite, Salt Lake City: Atchison, Kansas; York, Pa. Camera Club, Photographic Guild of Detroit

Club Slide Competition

Pasadena took first place in the December contest of the National Club Slide Competition, judged in Cleveland, Ohio, moving from 8th to 2nd place in the cumulative score. San Francisco Kodachromers still hold first place by a one point margin. Class B found the Salt Lake Club moving into first place in the cumulative scoring with a 15-point margin over Cream City Color

Individual winners in the December contest were: First-Odessa Barrett, Salt Lake Photochrome - " Sunny Afternoon ". points: Second Sandra Thaw, National Photo Society-" Navajo Pastoral", 27 points; Third — Rev. H. Bielenberg, Venango Camera Club, "Kitten's Nest", 7 points: Fourth-Dr. Seymour Gray. Photochrome Club of San Francisco, "Skyward Bound", 26 points; Fifth Miller Brockett, Pasadena, "First Snow", 26

Standing of the first five clubs in Class A in the first two contests are San Francisco Photochrome 223: Pasadena Photochrome 222; Minneapolis Color 197; Jackson (Denver) 191 and Science Museum 187.

Class B standings are Salt Lake Photochrome 2021 Cream City 187; Venango 184; St. Louis 175 and Detroit Guild 175

Slide Competition for Individuals

The November 1948 International Color Slide Competition for Individuals was judged at Sacramento. The jury was composed of Inez Doyal, Edwin Rosenberg and Charles McKee. Out of the 352 slides submitted by 89 entrants, "A Sunny Afternoon" by Odessa Barrett of Salt Lake City was awarded first place. "My First Lipstick " by Art Shea of Dayton, Ohio, was chosen second "M-teor" by Jack Cannon of San Francisco, California, placed third; "Not a Joy Ride" by G. F. Johnson, State College, Pa. took fourth place and "Winter Cold" by G. M. Bramann, Niagara Falls, N. V. was given fifth place.

News and Notes

A color calendar was reproduced in the December 26th, 1948, Coloroto of the Minneapolis Sunday "Tribune," a project of the Minneapolis Color Photo Club. All photos were taken by club members, and included Kenneth Johnson, Vernon Roufs, John Wilke, P. W. Young, Robert H. Biron, Kenneth King and F. H. Jacobson. The calendar is similar to the one which has been published for several years in the Chicago "Tribune" and makes a very attractive color page. We hear that the club got \$100 for it.

From T. Wilcox Putnam we learn that the 17th Detroit International made ten 5 v 7 color transparencies from selected slides and displayed these with the accepted

black-and-white prints at the Detroit Institute of Arts. They were prominently displayed at the entrance to the black-andwhite salon in a large illuminated viewing cabinet and elicited much favorable com-

"A color print set was prepared early this year," W. K. Raxworthy reports, with 26 participants spread over 18 States. It will be enroute for about a

"The Convention Committee for the 1949 PSA Convention is organized and has started to work," Jane Shaffer, general chairman, reports. Harold Kuever, 4701 Kossuth, St. Louis 14, has accepted the local chairmanship of the Color Division for both program and exhibits.

The subject of successfully using 35mm color photos in illustrating, advertising, etc. was brought to our attention recently when we received one of several prize prints awarded by the Minneapolis Council of CCs. The "Imbachrome" color prints were 8 x 10, and were marvelous for detail and color rendition, and definitely showed the possibilities of using 35mm transparencies, with their greater depth of focus, etc. The prints were made by an imbibition process. P. W. Young writes us that, in addition to your columnist, prints were awarded to Blanche Kolarik, Chicago, J. Roufs, Minneapolis, and Sinclair Moore, Chicago

Red Eve Reflections

Is cotoz photographs made by synchronized flash, the occasional reflection of a pink or even fiery red color in the eyes of the subject is quite mystifying. The cause has a simple explanation, however, and is, in fact, the same thing that makes an animal's eyes light up in the beam of car headlights. When a bright light is close to the observer's viewpoint (as a synchronized flash bulb is close to a camera lens), and the eye being illuminated is looking toward the light, the pupil of the eye appears to light up. The reason is that the rays enter the eye, are focused on a small spot on the retina, and are reflected back toward the eye lens by the choroid layer immediately behind the transparent retina. The lens of the eve gathers the rays being reflected and projects them back in a narrow beam toward the light. It the observer's eye is close enough to the light to be in this beam, the effect is seen.

In animals, especially nocturnal ones, the choroid is highly reflecting and the effect brilliant. The beam is wide and therefore the effect is readily seen. The human choroid is not highly reflecting and the small pupil of the eye lens gives a narrow beam, so the effect is rarely noticed.

This effect is utilized when eyes are examined with the ophthalmoscope, in which a concave perforated mirror worn over the observer's eye makes the light source and viewpoint coincide.

Unlike an ordinary small, white highlight reflected from the outer surface of the human eye, a choroidal reflection fills the pupil and is red. If the eye is deflected toward the nose enough to make the light source image fall on the "blind spot," the reflection is pinkish white.

Eyes differ considerably in choroidal reflection, the effect seeming to be more noticeable in small children with difated pupils. The effect is not frequent; if it does occur, have the subject look a little away from the camera next time.

In black-and-white photographs the effect will appear as a large, though dim,

highlight, sometimes resembling a cataract, Animals in flashlight pictures, if looking toward the light, may show the effect as a brilliant, characteristic color.

JOHN W. McFARLANE, FPSA

Another Racket

Don't be vain enough to send the requested \$15.00 (the usual price) if you receive in the mail, an unordered miniature photograph of yourself in what appears to be an attractive case. The promoters of this racket have ways to get negatives. You may have had your photograph taken at a studio sometime previously and that studio may have sold their old negatives to the promoter, after holding them the normal length of time. You will receive a fanciful explanation why the picture was sent-perhaps, "it was used for exhibition purposes and now is being offered at a special price." If you buy it, you will be entitled to the registration of your name on the premoter's special sucker list. You are not obligated to return unordered merchandise. Do not use it but merely hold it for a reasonable length of time. If the sender calls in person and properly identities himself and claims the picture as his property, you should give it to him. If you care to, you may demand a reasonable sum for care and custody of his property. BETTER BUSINESS BUREAU

Photography reveals . . .

The correct time. The U.S. Naval Observatory makes its time determination photographically, recording the images of stars on a special photographic plate which then is measured precisely under a microscope.

The location of radio active particles in uranium ore. By placing a polished section of the ore in direct contact with photographic film, the radioactive particles are located.

Coming Color Exhibitions

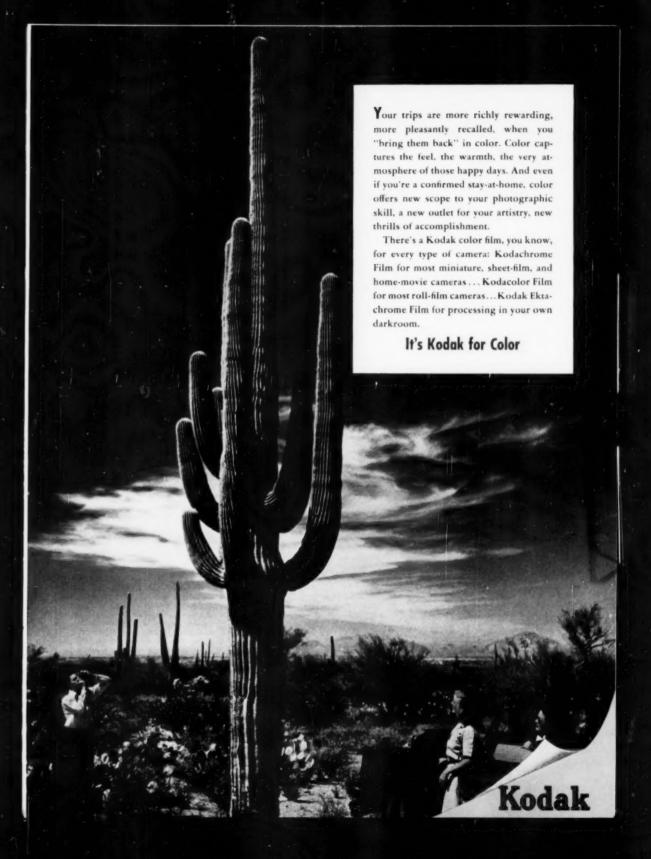
Michigan Nature, Cranbrook Institute of coence, Mar. 23. Apr. 19. Deadline March 14. four slides, St. Forms; Roger E. Richard, 823 N. Gulley Rd., Dearborn, Mich. Swithgate Chendaud, Apr. 30 May. Dead-ne March 29. Four slides, 50c. Forms; W. J. Lundred, 2. Dennis Parado, Southgate, N. 14.

England.

2nd El Camino (Los Angeles), May 2-8.

Deadline April 16. Four sides \$1. Forms:
George F. Brauer, 194632 Lovelace, Los Angeles

Calif.
 May 25-27. Deadline April 30.
 Halifax, May 25-27. Deadline April 30.
 Halifax, S. Forms: Peggy Wright, 96.
 Quimpod Rd., Halifax, N. S., Canada.
 Ist New York, June 3 and 6. Deadline May 15. Four slides, 81. Forms: Wim. D. Fuguet, 1065 Lexington Ave. New York 21, N. Y.
 Ist Hawaii, Henolulu, July 11-16. Land, 10.
 Land, Jr., 136.2 Pensacola St., Honelulu 25, Hawaii.



BULLETINS

NEWS OF KODAK PLANS AND PRODUCTS

Color Prints—You can now have Kodachrome Prints 3X (3x41, inches) or Kodachrome Enlargements 5x7 or 8x10 inches, made from 4x5 or smaller sheet and roll film color transparencies (transparencies made on Kodachrome Priotessional Film, Kodak Ektachrome Film, or similar color-transparency films). You can also have 3X and 2X Kodachrome Prints made from single-frome miniature Kodachrome transparencies. Ask your Kodak dealer about these new Kodachrome print services.

Lovely View—Winter, the season when you do most of your indoor work, is also the season when you really need a view camera. Pick of the field is the Kodak Master View Camera 4x5—versatile modern departure from view camera tradition. Designed as professional equipment, to save freighting a bulky 8x10 around on field assignments, it's also ideal equipment for the serious amateur—particularly the color enthusiast. Has every swing, tilt, and control you expect in a big commercial camera, plus 360-degree re-

See your Kodak dealer

KODAK products are sold through Kodak dealers, any of whom will be glad to complete the descriptions of Kodak products which are mentioned in these pages. Usually, too, they will give you opportunity for firsthand inspection of the advertised items.

And in matters of general photographic information your Kodak dealer will be found to be soundly informed.

volving back, extreme rigidity, clean functional design, light weight, and other appealing features. Examine it, and you'll fall in love with it.

Need A Good Timer?—Of course you do, and the Kodak Timer With Tilting Base is a superb choice. Easy to use, spring-wound, it will precisely cover all intervals up to 60 minutes; has both minute and second hands, which can be quickly reset to zero. The "start-stop" lever permits stopping the timer and then starting it again without resotting to zero. Dial is large, white, with big clear numerals, and tilts to any desired angle for easy visibility (see cut). The price, \$7.50.

For automatic timing of enlarging or contact printing exposures, there's also the Kodak Electric Time Control. It plugs into the enlarger or printer circuit, will time intervals up to 57 seconds (shutting off the light automatically at the end of the selected interval), and can be set for either one-time or repeat timing. The price, \$15.



KODAK REFLEX II CAMERA: Faster Shutter, Film Control, and Kodak Ektalite Field Lens Make It The Best 21/4×21/4 Buy



BEAUTIFUL styling of the new Kodak Reflex II Camera is obvious in the picture at left. Less evident are the new optical and mechanical features which make this camera—at \$135, plus tax—the best buy of all 2½,x2½,imich roll-film reflex cameras.

Viewing and taking lenses of this new reflex are equals in type and precision; both are Kodak Anastar Lenses f 3.5, 80mm., with all glass-air surfaces Lumenized. The taking lens is fitted to a Flash Kodamatic Shutter with speeds from 1,2 second to 1300.

In image brilliance and evenness of illumination, the viewing system of the Kodak Reflex II Camera ranks above any other ground-glass viewing system. The clear, sharp image delivered by the high-aperture, color-corrected viewing lens is equalized and intensified at the ground glass by a wafer-thin Kodak Ektalite Field Lens. Laboratory tests prove that this field lens multiplies the effective brightness at the corners ten times—a tremendous aid to accurate focusing.

The automatic film stop and film counter require a minimum of manipulation. You simply wind the film to 1, then set the film counter from 0 to 1. After each exposure, flick, the button just below the neck strap lug, and wind the film until it comes to a dead stop; the film counter automatically moves up one number. After the twelfth exposure, wind the film on through, and the counter automatically returns to 0. The mechanism is smoothworking, accurate, and fully enclosed.

Body of the Kodak Reflex II Camera is a sturdy one-piece aluminum alloy die casting; exterior finish, satin chrome, black lacquer, and black morocco-grain Kodadur. The camera weighs two pounds and, closed, measures \$5_4,x3\2,x4\$ inches; it accepts Kodak 620 Film and obtains 12 negatives, 2^1_4 x2\\(\frac{1}{4}\) inches, to each film roll (9 negatives to a roll of Kodacolor Film).

Step down to your Kodak dealer's, sometime soon, and study the Kodak Reflex II Camera. You'll find it well worth the trip.

HOW THE FIELD LENS WORKS: Below, left, light ray diverges through an unaided ground glass; viewer image is durk at edges and corners, with "hot spat" in center. An ordinary condensec-type lens equalizes the light (center diagram) but it's heavy, bulky, and disterts the image. Kodak Ektalite Field Lens of the Kodak Reflex II Camera is compact, lightweight, intensifies brightness, and eliminutes "hot spat," but doesn't distert image or impair definition. Actual lens has 200 throad-fine ribs to the inch.



PROJECTION NOTEBOOK

New Dress—The popular, potent Kodaslide Projector Model 2A has been smartly restyled; now appears in a neat light gray with touches of black. Slide carrier is also newcompletely redesigned for extra-smooth operation and easy grip. The superb optical sys-tem and mechanical design remain as before so good that the projector's 150 watts are ample for all home showings. Optical system continues Lumenized-all glass-air lens surfaces, condensers, and even the heat-absorbing glass hard-coated for superior image brightness, sparkling contrast, and purity of color projection. It's a compact projector, 514 inches tall on 4x5-inch base, and both body and base are die-cast aluminum. Choice of two high-aperture Kodak Projection Ektanon Lenses, the 5-inch / 3.5 and 71 -inch f 4. Price, with the 5-inch lens, \$47.50.

Smoother Changer—Kodak engineers have done a redesign job on the inner works of the Kodaslide Changer. The new model looks much like the old, but delivers a smoother, consistently reliable performance, even with old, worn slides. Magazine holds up to 46 transparencies in cardboard mounts; 30-inch cable permits the projector operator to sit comfortably aside, changing slides with a flick of the thumb. Unit fits Kodaslide Projectors 1, 1A, 2, and 2A; the price, complete, is \$17.50.



Still The Master-For power and lens equipment to cope with any projection situation, the 1.000-watt Kodaslide Projector, Master Model, is your choice. Equipped with an optical system which transmits light to the screen in a strength and purity never before attained by any 2x2-inch slide projector, this superb instrument offers a choice of five lenses-the Kodak Projection Ektar Lenses 5-inch 12.3, 7! -inch 12.3, and 11-inch 13.7, and the Kodak Projection Ektanon Lenses 5-inch f 3.5 and 71 -inch f 4 . . . all, of course, Lumenized. Optical system provides complete coverage and even illumination of slide area; condenser surfaces are Lumenized; heat-absorbing glass is a onepiece, high-efficiency unit. Power-cooling comes from a quiet turbine-type fan, cool air flowing freely over both sides of the slide. Body and base are of die-cast aluminum, for



Viewer News-An attractive carrying case, at \$27.50, is now available for the unique Kodaslide Table Viewer. Cover removes, and Viewer can be slid forward on two tracks into operating position. Case also accommodates Kodaslide Sequence Files or Kodaslide File Boxes. It's a needed item for salesmen and demonstrators-who, by the way, are turning more and more to colorslide presentations, rather than lug around a ton of sample products. The Viewer is a projector, slide changer, and screen all in one, and there's no need to turn off the room lights (see below).

Much For Little-Still the biggest bargain on the 2x2-inch projector market is the Kodaslide Projector Model 1A. Smoothly modern in design, this powerful little projector sells for only \$27.50 complete—yet "outperforms" many projectors that cost much more. The lens is a Lumenized Kodak Projection Ektanon Lens 4-inch f 3.5-color-corrected, sharp-cutting, and high-aperture. The efficient three-element condenser system is also Lumenized for extra power and brilliance. Projector body, molded of hard black plastic, stands only $5\frac{1}{12}$ inches high; is only $3\frac{3}{16}$ inches wide, $9\frac{3}{8}$ long. Both the lens and the smooth-working slide carrier are removable,



for compact transportation. Lamp is 150-watt, same as the Kodaslide Projector 2A. Projector accepts the Kodaslide Changer (above).



light weight and lifetime service-whether in the home, club, school, lecture room, church, or auditorium. Controls are smoothworking; slide carrier automatically centers the slides.



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At your Kodak dealer's-

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All the chemicals you need for an evening's developing or printing, packed in a handy 20-cent carton: KODAK UNI-VERSAL M-Q DEVELOPER, KODAK UNIVERSAL STOP BATH WITH INDICATOR, KODAK UNIVERSAL FIXER.

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Also in convenient foil packets, these three famous developers: KODAK MI-CRODOL DEVELOPER—for fine-grain negatives: KODAK DEKTOL DEVELOP-ER—for superior enlargements: KODAK UNIVERSAL M-Q DEVELOPER for all films and papers. Ask your dealer for free booklet describing all the new Kodak chemical packets—they eliminate fuss of storage ... permit use of fresh chemicals overs time.

...with test tube and test strip, he's studying the absorption characteristics of dyes...learning how to control their effects on film and paper...helping you to make better color pictures...with better-than-ever preparations for your darkroom. A special division of Kodak's famous research laboratories is devoted to this continuing improvement of photographic chemicals...for both color and black-and-white use...Eastman Kodak Company, Rochester 4, N. Y.

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S-GALLON SIZE

Kodak

Territorial Columns

South & Southwest

By H. D. (Herr) Onm. APSA P. O. Box 331. San Antonio, Texas

Just received our first copy of the bulletin of the MidSouth CC of Memphis, Tennessee. They have not named this bulletin as yet but it looks like it will be one of the best in the area. This club has a membership of 43 and a rather long waiting list. Apparently they have a complete and modern clubroom including a studio, darkreoms and, we assume, models. An interesting item mentioned about their equipment is that all lighting equipment is standardized at 3700 Kelvin-a boon to those who want to work with color. We are sure that visitors will find a real welcome at their meetings.

Tom Barr's photograph of the Grand Tetons on the cover of the Birmingham CC "News" is excellent. If you have never tried to photograph these mountains there is still a photographic treat in store for you. This club has recently gained a new member, an old friend of ye editor's, Lloyd Rafalsky. You're traveling in fast company, Lloyd, but from what we know of your work you will hold up your end.

The Photo Society of San Antonio membership is growing by leaps and bounds. Last meeting we counted at least 60 memlers and visitors present. This is a considerable improvement over the seven members with which the club started back in 1942! A number of the never members are coming along in a hurry and are going to make the clider hands get out of their ruts or lose their places in the sun.

A new idea, at least to us, has been put both by the Llano Estacado CC of Borger, Texas. They instituted a point system for attendance, beinging in prints and winning contests last year. The winner of this point competition is to be honored by a party given him by the club. Presumably he gets to ext free while the rest of the members have to pay for their filets. This progressive club has recently furnished PSA with a traveling exhibit of prints that they have collected over the past three or four years. Your editor had an opportunity to view their last exhibit and it this one is as good, they are to be congratulated. In a recent election J. T. Record was voted into the presidency. Record's print, "Eddy County Court House," was also chosen as Print of the Year.

The Oklahoma CC was fortunate in securing Houstin Payne to give a lecture and demonstration on portrait lighting. Payne is one of the top portrait men in that part of the country and is active in professional circles all over the Southwest.

Congratulations to Paul Linwood Gittings, of Houston, and Dallas, on his election to Fellowship in the PSA. Glad to know that our Houston correspondent, C. L. Herold, is back in the saddle, after a quite serious operation. We greatly missed your letters C. L.

The Dallas correspondent, Bill Re-ves, reports that member Wallace Ralston recently gave a complete lecture and demonstration on Mediobreme. There was a run on the art stores for oil colors the next

Your editor has just had to invest in new hats, at least two sizes larger than he has been accustomed to wearing. An invitation from the Smithsonian Institution to exhibit a one-man show of 60 prints during the

New England

month of April was responsible.

NEWELL GREEN, APSA 64 Girard Ave., Hartford 5, Conn.

Samuel Chamberlin, who received an Associateship in the PSA last November. and whose "New England Calendar" makes his name a familiar one everywhere. was critic for the monthly print competition at the Boston CC in January. We should like to have been present. It would be extremely interesting to hear a discussion as to what constitutes good composition in a photograph between Mr. Chamberlin and some of the FPSA's in the B. ston CC who have done so much judging, such as Messrs, Atwater, Jordan, Hammond and Standish. Mr. Chamberlin was trained as an artist and must know composition, yet so many of the photographs he considers worthy of publication in his Calendar" are completely at variance with the principles of good composition used by photographers on a safon jury We'd love an explanation.

Mr. F. Eugene Johnson, of Recinester, a representative of the Eastman Koolak Co., visited several New England clubs during January to talk about color photography. He concentrated more on the taking of pictures, demonstrating how color shots could be improved by the use of auxiliary lighting such as tiash and reflectors. Among the clubs visited were the Springfield (Mass.) Photographic Society, the Portland (Me.) CC and the Boston CC.

We can't mention the Boston CC without noting the severe loss the club suffered in the death of its President, Merrill P. Mims. The news saddened everyone, for he had wide contacts and was most popular. He was a PSA member and had been active in the Boston CC for some time, serving it well and contributing much by the excellence of his work. He will be keetly missed.

The 11th Springfield International was hung at the George Walter Vincent Smith Art Museum for three weeks in January and was attended on opening night by a goodly number of PSAers and camera club members from the area. An interesting feature of the salon this year was the large number of fereign entries. About a third of the 1100 prints submitted came from abroad and 69 of them were among the 254 accepted for banging. The salon was judged by Mrs. Barbara Green, APSA, L. Whitney Standish, FPSA, and John W. Doscher, FPSA, who replaced John R. Hogan, FPSA, as the latter's health forced him to withdraw.

The Bridgeport (Conn.) CC had a swap night and auction in January with Jim Brown as auctioneer, and members had a good time disposing of their extra equipment. They could have items auctioned off and collect the money themselves, or they could donate small items to the club and let the sale price go into the treasury. It's an easy way to help the club.

There have been two state photographic cyhibits in New England this winter, both of them engineered by camera clubs. The Portland (Mc.) CC sponsored the Second All-Maine Salon which was hung in the Sweat Museum of that city for two weeks in January. Some 79 entries were sent in both by clubs and by individuals and all were hung. However, a jury from the Portland CC, consisting of Rager Jordan. Roger Deering and Roy Monroe, picked three top prints and selected 24 from the exhibit to form a Maine traveling show.

Over in Vermont, the Burlington CC is cooperating with the Fleming Museum at the University of Vermont, to sponsor the 8th All-Vermont CC Eshibit. All clubs in the state are invited to submit 18 prints of their own choosing. Clubs participating besides Burlington are those of Barre, Bennington. Bellows Falls, Brattleboro and Springfield. The exhibit will be shown at the Fleming Museum during February and then visit all the participating clubs.

The Connecticut Valley CC, of Hartford, had a round table debate at a recent meeting on the subject: "Expesure meters are the bunk!" The indefatigable Ray Le-Blanc, who vies with Pop Warner, of Everett, Mass., for the title of "Champion Non-Stop Sounder-Offer", upheld the affirmative. In fact Ray had to carry it just about single-handedly, so Justily did the members defend their meters. At the end, the consensus was that it would increase your knowledge of photography if you learned to operate without a meter, but life was too short for the average amateur to depend on anything else. It made a good evening, though, and if you have anyone to uphold the affirmative, you might try it some night when the speaker doesn't show up

The Everett (Mass.) CC had a fascinating evening when Stanley Lonbara came to a December meeting through the courtesy of the Gelotte Camera Stores, of Boston, and demonstrated the fabulous Land (Picture-in-a-minute) Camera. Even though it was done right before their eyes, the boys still found it hard to believe. There was a model on hand, Miss Lorraine Baker, and afterwards the members had a chance to handle the camera themselves. There was even a man-bites-dog touch when the model commandeered the camera and made Pop Warner get on the stand

while she took his picture. They say she did all right too.

A last minute bulletin has just come in announcing that the famed exhibitor, P. H. Oelman, FPSA, of Cincinnati, will give his celebrated talk on "Figure Study." Sunday afternoon, March 13, at John Doscher's Country School of Photography, in South Woodstock, Vt. The talk will be open to anyone.

psa Canada

By Brossom Caiox, APSA
77 Sunnyside Ave., Westmount, P. Q., Can.

Quite an array of literature is piled in front of us. Such titles as Exposure, Focus, Shudder, Close Up, Bellows, Cameragrams, Reviews and Bulletins of all styles and dimensions are telling of a wide variety of activities from Halitax to Victoria, and all showing a lively interest in making the most of a wonderful hobby. We have read accounts of the PSA 1948 Convention by Evelyn Andrus, Sam Vogan and Frank Hopkins and were impressed by the fact that so numerous and varied were the programmes offered that these three, quite unintentionally we presume, covered a large field of both colour and black and white. Let's start saving up now for St. Louis next autump

The Montreal Amateur Photographers Club has been on the move. It now holds its meetings only a short distance from the previous quarters but we believe the new home is more spacious. Sarnia too has bettered itself and is celebrating the first meeting in their new quarters by an exhibition of colour prints procured from the PSA Colour Dixision.

The weekend of April 9th will find the Montreal CC's Frank Hopkins and two other well known photographers at Ste. Adele en Haut judging entries for an exhibition sponsored by the Ste. Adele Lodge, which we believe is to feature the attractions of the Laurentian scenery in winter. Contest open to all and there will be prizes including a sojourn at the Lodge.

The MAPC Review tells us of an interesting exhibition which took place in Bradford, England. Here the Arts Club Show and the annual exhibition of photography hung concurrently and showed that the fensmen no less than the bru-hmen were inspired by heauty "to produce pictures combining fidelity to subject with considerable imaginative power."

We welcome to our ranks Jim McVie already a successful salon exhibitor and a valued member of the Victoria CC.

In the Ottawa CC they tried something a little out of the ordinary. Each member was given an identical negative and was assigned the job of producing a pictore for the following print night. Just imagine what a variety of croppings, papers and general treatment must have resulted.

A certain amount of visiting has been taking place. Sam Vogan was the guest of the Hamilton Camera Guild and the Port Colborne CC joined them for a recent party.

The C.P.A., or Color Photographic Asociation of Canada, continues to forge ahead and to play a most important part in the photographic life of the country. Their latest journal announced the names of seven regional directors. Russell Heffler for the Maritimes, Clinq-Mars Benoit for Quebec, Dr. J. F. Burgess for Montreal. A. O. Randali for Ottawa and Eastern Ontario, Charles Kidner for Central Ontario. W. W. Hughes for Western Ontario and Charles A. Howe for the U. S. A. Additional Regional Directors will be named later. Anyone wishing to join this organization can write to the secretary, Mary Owens, 215 Lonsdale Road, Toronto or to the regional representatives, the majority of whom are listed in the directory issue of PSA Journal (May).

As surely as comes the spring, the salons appear in large numbers. As we mentioned last time Toronto (colour and monochrome) takes place March 21-April 2-closing date March 5. Next in line is Port Collsorne which runs April 16-25 with closing date April 4. This is the fourth successive year that this small club with the enthusiastic help of numerous friends has put on an absolutely top-notch international with a large entry, attractive catalogue and out-of-town judges. Your columnist, John Lawson, of Toronto, and Walter S. Meyers, of Rochester, will comprise the jury.

While on the subject of Carons on juries, let us put in a plug for the Syracuse show which has included a Canadian judge— Ray—on their impressive panel of six eminent photographers. This show includes color, its closing date April 4.

Next comes the 9th Montreal International with an all PSA jury—Jim Campbell of Montreal. Clarence Sims of Toronto and Jean Elwell from Detroit. The closing date is April 11, and the show itself May 14-29. This is one of the continent's large shows and deserves your consideration. The dates are such that it is possible to forward prints from Toronto and at the conclusion of the Montreal show to have them tushed to Quebec for June 1.

The Quebec International is a brand new one and should be excellent, judging by past performances as an all Canadian show; the jury is Gordon Heitshu of Quebec, George Nakash of Montreal and Edward Crossett of Chicago.

Still another must is the first Halifax international with its closing date April 30 and running for three days May 25 27. This is a colour and monocirome show and the joint undertaking of the Photo Pictorialists of Halifax and the Colour Photographic Guild of the Maritimes. There will be three well qualified judges for each section, including W. R. MacAskill, so well known to those of ⁵us on the first Canadian American Portfolio and to practically everyone else who loves the sea.

The Hamilton Canadian Show is planned for the spring, but to date of writing we have not been given the dates.

And last but by no means least is the 4th Gateway to the North Salon at Edmonton with closing date of June 15th. It is exhibited from July 18-23.

Middle Atlantic

By William F. Blakeney 34-35 76th St., Jackson Heights, N. Y.

The 1949 National Photographic Show was held at the 71st Regiment, Park Avenue and 34th Street, New York City, from February 19 through 22nd. This show was sponsored by the Photographic Merchandising and Distributing Association and the New York Guild of Photographic Dealers and attracted thousands of amateurs. PSA JorkNAL was among the exhibitors.

In addition to constantly changing feature events at the center stage, there were a series of lectures on almost every phase of photography, both still and motion picture. Visitors tried out the pointers they received at the lectures on live models and stage settings. Members of the camera clubs affiliated with the Metropolitan CC Council had a special print contest for over \$1,000 in prizes.

Dr. C. E. K. Mees, Hon. FPSA, Eastman Kodak Company vice-president in charge of research, has been awarded the Adel-skolds gold medal of the Photographic Society of Sweden. Dr. Mees acknowledged the award in a shortwave broadcast beamed to Sweden and other countries. The broadcast was the first of a series of talks on scientific photography which the Kodak scientists has been asked to make for the World Wide Broadcasting Foundation to

"Tops in Photography," the show put on each year by the Metropolitan CC Council, will again be held in the main ballroom of the Hotel Pennsylvania (now the Statler). 34th Street and 7th Avenue, on March 9. This show brings to the public the outstanding work of the top amateurs of the world. Pictures come from countries behind the iron curtain, as well as other parts of Europe. In past years the show has had an attendance of over 1100. The guest speaker this year will be P. H.

Oelman, FPSA, of Cincinnati, Ohio With real regret Herman DeWetter. FPSA, has been forced to resign as curator of photography at the Brooklyn Museum. He was a fellow of the PSA, RPS, and an honorary member of photographic clubs and societies throughout the world. Under his guidance the Museum was one of the first to raise the photographic department to full departmental rank and he was its first curator. His collection of prints for the museum is an example of the high standards that should be required for photography, and his place as a judge, teacher and triend to amateur photographers will be difficult to fill. The new curator is Anthony Caruso, recently assistant to Mr DeWetter and fermerly of the photographic department of the Metropolitan Museum of Art.

Arthur S. Mawhinney, FPSA, was the judge for the metropolitan section of the American Society of Mechanical Engineers' Convention, Graphic Arts Section, Medals were awarded to the winners with Mr. E. S. Rowell, an engineer for Babcock & Wilcox.

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acting as chairman of the hobby section of the convention.

The Oval Table Society, photographic honor society, has elected Paul W. Gibbs, past-president of the Metropolitan CC Council, and Fendall Verxa, photographic editor of the New York "Herald Tribune," to associate membership.

A one-man show was held at the Brooklyn Museum of "Studies in Sunligh:" by Forman Hanna, of Globe, Ariz. Mr. Hanna likes to photograph the things he knows. On his recent trip to New York he tried some tree shots in Central Park, but did not attempt any pictures of New York.

The Delaware CC had a special color night in December with Alfred DeLardi, FPSA, as their speaker. His talk, voted as one of the finest lectures presented at the Franklin Institute of Philadelphia, was illustrated with 4 x 5 slides in color.

There was a large crowd out to witness
the two types of judges at the Miniature
CC early in the winter. Mr. George A.
DuBerg, president of the club, had two
painters. Miss Jessie Gillespie Willing and
Carl Tcherny, and two well-known amateur photographers. Mrs. Barbara Green
and Sidney Bernard, acting as judges at the
monthly print contest. The way the pro's
and con's were flying back and forth made
it one of the outstanding evenings so far
this season.

The CC of Richmond, Virginia, will hold their 13th Virginia Photographic Salon from March 20 to April 10. Three Medal Award Prints and 20 Honorable Mentions will be selected by the jury out of 100 prints hung. Prints will be judged by a PSA-recemmended board of selection. The salon is open only to residents and natives of Virginia. Contact Mrs. Jack K. Finnegan. Salon Director. Medical College of Virginia, Richmond 19, Virginia.

Every day of the week members of the Broeklyn CC may now enjoy their new club house. This is the result of team work by a hard working membership. The address is 413 Avenue N. Brooklyn, N. Y. and there is room for exhibiting prints, a club lounge, studio equipped with lights, and a darkroom.

Pictures by 38 women photographers were shown at the Camera Club of New York. For variety of subject matter, excellence of technique and approach, the makers of the pictures set a mark that would be difficult to beat.

A prize contest totaling \$250.00 in gift certificates was offered by Willoughby's Camera Store for the best picture of their Photodrome equipment display center during the month of December.

C. Zapata of the Inwood CC let his fellow members in on the secret of how he makes his prints outstanding "by putting in what nature has forgotten" with a piece of cotton, in other words, "Mediobrome."

The Maywood CC of New Jersey was host to Dr. E. I. Hind recently, when he gave his talk "My Camera and Me."

Dr. D. J. Ruzicka, FPSA, speaking at the Hypo Club, cleared up any doubt of photography being a real hobby after the interesting talk about his over 40 years of picture making.

psa Mid-West

By WILLIAM E. "GENE" CHASE, APSA 4164 Federer St., St. Louis 16, Mo.

The CC Council of St. Louis is sponsoring a collection of 25 to 30 prints by Missouri photographers. All photographers are invited to enter prints from which this exhibit will be selected by a competent jury chosen by the Council. Prints must be in the hands of Jack O'Brien, c/o Rexall Drug Co., 3901 North Kingshighway, St. Louis 15, Mo., no later than March 22nd. There will be no entry tee and the only cost will be the postage for sending them to Jack O'Brien, All prints not selected will be returned. The first showing of the exhibit will be at the April Convention of the Association of American University Women, Missouri Division, after which they will be available to any CC or photographic group desiring

Plans for the 1949 PSA Convention, which will be held in St. Louis October 19, 20, 21 and 22nd, are well under way and Jane Shaffer, General Chairman, and her Convention Committee have worked out details for many new innovations and worth while features, details of which will be announced in an early issue of PSA for the North PSA for

Those beautiful color shots of the principal tourist resorts in Mexico you saw in a recent issue of "Time" magazine were taken by none other than Bernard G. Silberstein, APSA, of Cincinnati. Bernie is a frequent contributor of technical articles to "Popular Photography," "The Camera" and "American Photography," His pictures have appeared in "Coronet," "This Week." "Time," "Holiday" and many other national publications.

The Topeka CC has elected the following officers to serve throughout 1939: Paul Eberhart, President; Merle Bucher, Viez-President; Charlotte Kessler, Secretary-Treasurer; and Directors, Myrtle Hayes, Paul Givens, Clark Gray, Joe Monley, Dan Rumpt and Stanley Alexander.

Incidently, the Topeka CC put their color exhibits to a very fine use. They show them to the patients at Winter General Hospital; and, I might add, a better place to show a color slide exhibit cannot be found.

It was a dark and stormy night, the worst blizzard in history was at its height, 30-foot snow drifts, etc., etc., but somehow Sten Anderson managed to get through some dope to me on the various Nebraska CCs. Says Sten: "The Lincoln CC has recently received prints for the Permanent Collection from D. Ward Pease, APSA, and Harry K. Shigeta, FPSA, 'Dune Slope' and 'Maelstrom' respectively. Both will be shown at the January 18th meeting of the Lincoln CC and then turned over to the University of Nebraska to be added to their permanent collection.

"Robert W. Huxoll. President of the North Platte CC, has resigned due to his moving to Kearney, Nebraska. Paul Thom-

sen, Vice-President of the North Platte CC, will take over the presidential duties for the balance of the fiscal year." Many thanks, Sten, it's grand to know that you are keeping the PSA fires burning brightly in Nebraska when even the trains can't get through.

The Flint (Mich.) Lensmen CC, a recent addition to the ranks of PSA, have received a set of fifteen 5 x 7 mounted prints from the Vauxhall Motors CC of Bedfordshire, England, to exhibit and comment on. The Flint Lensmen CC would like to share these interesting prints with other CCs. They are compact enough so that they can be mailed first class. Any CC desiring the set may obtain them by writing to Paul Petro, Secretary, c/o YWCA, Flint 3, Michigan. Officers of The Lensmen are: Robert Chase, President; Doris Stevens, Vice-President; Elizabeth Kartes, Treasurer and Paul Petro, Secretary.

By the time this column appears in print the judging of the Kalamazoo First International will be a thing of the past and the show will have been hung. However, at the time of writing the judging is still some three weeks off, but the prints are coming in fast and from all reports the 1st Kalamazoo Salon will be a success. Doing something about "one of those things that ought to be done," the Kalamazoo CC and the Photo Society of Battle Creek paid each other an exchange visit. Battle Creek visiting Kalamazoo on December 8th and vice versa on January 18th.

The Photo Society of Quincy (III.) started off the New Year with an auction night just in case any of their members received the wrong present for Christmas and did not know which store would exchange it. Not a bad idea ... sometimes.

Following the election trend in Illinois, the Capitol City CC of Springfield matched the new governor with a new CC president. Officers for 1949 are: Sewell Peaslee "Spec" Wright, President; John J. Culver, Vice-President; Evelyn M. Robbins, Secretary and Hallie H. Holt, Treasurer.

The Chicago Area CC Association have introduced a new print contest among their member clubs. It is a Small Print Contest wherein the prints submitted must not exceed 8 x 10 inches and must be mounted on 11 x 14 mounts. The idea behind this Small Print Contest is two-fold; first, to encourage those who do not have the equipment to make the larger sized prints, and second, to encourage the sending of smaller sized prints to salons.

Betty Henderson, of Fort Dearborn CC, packed her bag and lots of camera equipment and sailed for South America. She will probably be away for six months or so, then watch out, for Betty is one of the more capable exhibitors in the Chicago

In order to satisfy the many requests to have a peck at his Kodachrome sound movies of the Passion Play at Zion, Illinois, Harry K. Shigeta, FPSA, and his charming wife. Nobu, recently held a studio party and gave their many triends a preview of a few 15 minute shorts. Harry is filming the Passion Play in shorts

of 15 minute duration which ultimately will be spliced together to make a complete showing of the entire play. Everyone present agrees that the film is up to Harry's usual high standards.

At the recent Western Salon of Photography held at Weymouth, England, three exhibitors had all six prints accepted.
Yes, you guessed it, Harry Langer, APSA, of Green Briar CC, was one of the three

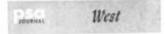
Russ Arnold, APSA, is conducting a course on Flash Photography on Saturday mornings at the Chicago School of Photography

The Reverend M. D. Meiser, APSA, of Elkhart CC, has been unable to participate in his usual photographic activities for the past several months due to a serious eye condition. However, word reaches us that he is regaining his sight and will soon be able to resume his photographic activity.

The Chicago "Daily News" is devoting an entire page each week in the roto section to Chicago amateur photographers Loren Root. Dr. C. F. Cochran, Jane "Pugmosed" Edwards, Sylvia and Bill Sminkey and Anne Dewey are among those who have had their pictures published.

Helland Engle, past president of Green Briar, now has a television program each Sunday evening which features the work of amateur photographers; and by means of conducting an interesting interview with the makers draws out hints on how to make better pictures in both stills and movies.

The Evanston Art Center is sponsoring a photographic exhibit during the month of March. Pictures will be acketed from the works of the two Evanston CCs, North Shore and Evanston. The exhibit will be operast with a fea at the Art Center, March with.



By Jack Casson 601 Market St., San Francisco, Calit.

Recent photograph to arrive was a beautiful number from Aloli Fassbender of the elever and artistic Fassbenders. And how does Mt. F. fit into this Western Rosleo? Well, Mrs. F. is an oldrime SF favorite peawar fans remember. Photo-Art " and the swell friend of all majordomo of the plany ... that was Frankie Unger who now is the same Mrs. F.

Wilber Andrews of the El Camino Color Patorialists takes me up on my wondering; when will the above mentioned group come north an another field trip? (They had a grand time around Carmel. Monterey district Labor Day last.) The answer: May 28-29-50... they must like the place. But the lost part is that they are trying to make the outing a joint color enthusiast's shebang by contacting other groups and getting a program whipped up. Local folks who tagged along on the Oakland outing to Asilomar will remember the nice evening's show these Southern visitors put on at that caucus.

The hardest item to report this month is the untimely passing of Calif CC's Bill

Pretsch. It was only a few months ago that we told of Bill's proud acceptance of his silver Life Membership Card in the Club . . longecity and service having prompted its presentation. And, Bill's service continues even in his absence, a bequest for the purchase of darkroom equipment was one of bis last acts. The CCC will miss Bill; and even without such reminders of a pal gone on, he wouldn't be forcetten.

Another tip of the lid and polite nod to Calif. (Univ. of) CC for its nice little Bulletin. This time a winner in a local contest was printed with a most appropriate tint block to emphasis the subject matter or simulate a toning job. Anythoo, it looked good. The scene: a big fire somewhere with apparatus going to town in a heated sort of way. The maker: a lad named Stover. The point being ha'l-why didn't he sign it "Smokey Stover"? hang on ... they get worse.'

Last year all the locals seemed to get a little Waikiki sand in their cameras. The present state of affairs indicates that Guatemalan coffee will be the piece d' resistance comes the current lavoff period. Dr. Bockman and Mrs. of the Photochrome Club have already cone, shot oodles of Bantams and returned via Yucatan and Mexico. Now dame rumor has Mike Dale (of the crimson tressed Dales) shopping for tickets and at the same to the same places ... time talking your scribbler into accompany ing him. My resistance will be as low as constant groveling thru guide books (and a new telephotos will let it be. And while speaking of Dale-a sequel to his month's Indian story is this: he ended his tiff with the Head man with a request for a job in the Office of Indian Affairs. Why? He had never had an affair with an Indian Broother . . . what is this colyum cumin' too 2.7.7 Well . . . this could be stopped by sending a little news. Come to think of it, maybee this is more fun.

The Old Wed. Noon Chowder and Corn Husking Bee mises Frank Enos, one of the founders of the group with the low claim to fame. This Dept relays a message to all loyal Wed. Nooners. "Hello" (ther news in the letter concerns a trip to England; the old Leica (practically Model I No. 1) is still perkin' but out of place on the Queen Mary.

Just because Taxeo is on the west side of Mexico we'll take the liberty of reporting Gordon Abbott's latest dabbling in the old approaches to pictorialism. G.A. (a judge for the last five years at Cheago) spent most of the Mexican winter printing enlarged Rollei negatives on handmade paper hand-sensitized with palladium. That is a job for all winter on any continent (and I always thought Palladium was a juke-joint in Hollywood). Also in the note—a more or less definite promise to tarn left at Laredo next trip and come West. Get the latchstring out, Newhall, he's goin' to head for Santa Barbara and househung.

Lots of shufflin here and there. Danny Threpe of Honolulu, erstwhile Carmelite, flew home for the holidays and scared the daylites out of this scribe. Did you ever pen a note to someone—look up—and there was the someone starin' at you? Oh well, it saves stamps. That's what Danny did. Brings news of Honolulu's Urban Allen's trip back to D.C. for the inauguration. Nice assignment, Went by way of Scattle. Also news of Chicago's Geo. Blaha to be on the judging staff—Hawaii's First Color Salon. Stop by SF, Geo.

Seein' as how Ralph Gray's card came from West Miami Florida it can be reported in this Regional Col that the Ex-Lubitsch of Mexico is filming these four dozen like mad but isn't too happy. Very few Yankees wear serapes . . flestas have more moxie per mm than polo, golf or tennis . . . and stuff like that there.

Before tapping '30' on this we'll say "Thanks again" to all those whose slide contributions have made our drive quite a success. I will try. that's a promise ... to answer all the nice notes (what a promise'). If I don't, remember, we and the Boys appreciate it all. But don't stop note... ask your photofriends to get on the ball ... we need many many many more. And now, the Northwoods Flash; G. Kinkade.

Some 44 prints and 73 slides, cream of the year's crop, were scheduled to be shown at Washington State's Foto Alpine annual show. Cups and prizes were to be awarded for highest scoring exhibits.

He had tough competition, but Glem Bentley of the Grays Harbor CC had the most unusual Christmas card seen around the Northwest. Glenn's cards were actual dye-transfers, 5 x 7 in size, and he made count them!) 48! The scene was the famous chapel at the Grand Tetons in Wyeming, a spot Bentley visited last summer on his vacation. The industrious color worker writes that his Christmas cardshould refute the argument that it's difficult to make a number of color prints from one set of matrices. He says it was impossible to tell the difference between the first and last prints.

Washington Council and Scattle Society Prexy Ray Pollard spent most of the month of January in sumy 127 California. Ray had been having trouble with cantankerous teeth, and his Doc prescribed a month's vacation. (Ow Oh, my aching tooth') It was expected that Ray would visit some of his photog friends in the

Clarification of the decision to disband all PSA Chapters has been received from national headquarters, and Northwest officials announce there will be no let-up in meetings there. The group will no longer be an official branch of the PSA, but will function as an affiliated group, much the same as other camera clubs. Meetings will continue to be held the third Thursday of odd months at the Seattle Society quarters, and all PSA members are invited to attend.

All Washington Council members were saddened to learn of the sudden death of Fred R. Doble, president of the Olympia CC. He was an industrious club worker and was known for his large collection of outstanding color transparencies.

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from 1/30 to 1/1000 sec, and Time; built-in synchronization; reflex focusing; revolving back. Accessories include case, interchangeable lenses, filters, film pack adapters, film holders, film magazines, lens shades, Graflite Flashing Unit, focusing panel, etc.

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figuratively and literally got their eyestull recently when they were treated to a showing of three-dimensional color slides. Fr. C. M. Depiere showed the pictures by twin projectors, with 60 members of the audience wearing polarized glasses.

OFFICIAL NOTICES

The Board of Directors held its third meeting for the present term on Saturday, January 8, at 10-15 am in the Sheraten Hotel, Rochester, New York, President Phelps was in the chair and the following were present Messes, Carlson, Howison, Jameson, Magee, Mulder, Schumacher (for Photo-Journalism Division) and Wheeler

The minutes of the meetings of November 3 and 6, 1948, after correction, were

approved.

The balance sheet as of December 31, 1948 and statement of profit and loss for six months ended December 31, 1948 were scrutinized carefully and the Treasurer was asked for further information. Ap-

proval was postponed.

The Board culed that, beginning with its next meeting, each Standing Committee and Division will be required to make a short, written report of activities and finances at each meeting of the Board These should be sent to the positing officer.

Honorary Representatives to foreign countries were reappointed for the coming term. These appointments expire with the Annual Meeting of the Board when it convenes in St. Louis next October.

The Honors Committee has printed a new form for application for Honors consideration. This form gives instructions to applicants, states briefly the qualification-desired in candidates and further clarifies what is needed as supporting evidence.

The form is applicable to all PSA Honors and is available from PSA Headquarters.

The Board voted to purchase an Associate Membership in the American Standards Association.

The National Lecture Program Committee secured the services of Mr. Fred Archer, who gave lecture demonstrations under N.I.P. auspices in Chicago on November 10: in St. Louis on November 15; and in New Orleans on November 16.

The Board approved the Photo-Journalism Division By-Laws

Mr. Byron Chatto, Hon. PSA, was given permission to organize informally the Charter Members.

The Board took note of the gracious action of the Ocal Table Society which contributed \$50 to the Pictorial Division to assist in bringing to the 1949 Convention the New York Museum of Medern Art Exhibition of "Fitty Years of Photography". The President was instructed to express the Board's grateful appreciation to the Oval Table Society.

The next meeting was set for New York City on March 8, 1949.

There being no turther business before the Board, the meeting was declared closed at 11.55 pm.

New Headquarters Fund

In addition to those donots previously listed in PSA JOURNAL, the following have contributed to the New Headquarters Fund:

Anderson, Robert S.
Ashton, Frederick G.
Bakker, James C.
Bakhesar, Harvy G.
Bathesar, Harvy G.
Bathesar, Harvy G.
Barbasar, Harvy G. M.
Barraws, Robert A.
Barmows, Robert A.
Barmows, Robert A.
Barmows, R.
Barmows, M.
Cooper, Les
Brownel, J.
Cooper, Les
Barni, M.
Control, C.
Sammod, J.
Cooper, Les
Barni, M.
Barmows, M.
Barmows,

Johnson, S. B.

Keilingt, Elvon L.

Kendilchart, Ann M.

Klein, Dr. Joffus
I. Ann, Useil John
MacNeill, E. Fressis
M. Alpin, David H.

Reyer, Wis Grass E.

Villlard, Decarur C.

Moddesoner, John C.

Mueller, A. J.

O. Shene, Dr. B. J.

Paton, Fred
Paulson, E. I.

Pessin, Phillip

Peterson, Warren A.

Ramsey, Dave W.

Rod, Clair

Savary, W. H.

Stockels, Harry A.

Savery, J. Gordon

Sale, George F.

Soules, Dr. Guilford H.

Strag, G. Lee

Weis, H. M.

Weight, Thomas C.

Yender, George

Young, George Mien

Camaraderic CC, San Jose

Grand Rapids CC

Lima Camera Club

Nigaria Photo Society

Reading Camera Club

Scarab Photo Society

Schenerad Photo Society

Schenerad Photo Society

Schenerads Photo Society

The goal of the fund is \$5,000.00 of which 721 members have contributed \$3800.08 as of this date.

Question Box

(Cancluded from page 100)

tion. Therefore, in order to have the projected image appear properly when viewed from the yard, the film must be turned over in the projector gate.

Normally a reversal original in blackand-white or color is wound emulsion sideout, and when this is threaded on the projector the base side is toward the lamphouse and the emulsion side is toward the projection lens. The film should be wound so that the emulsion side is in and will come off the reel clock-wise and be toward the lamphouse during projection. This makes titles and other printing appear correct from left to right when viewed from outside.

When using translucent materials such as ground glass or flashed opal, there is a limit to the size of such material that can be obtained in retail stores. Sizes up to $16 \times 20^\circ$ and $18 \times 24^\circ$ are about the limit. Therefore, you may not be able to project a picture as large as you would by reflected light.

The angle at which pictures projected on a translucent screen can be viewed is not quite as great as that of reflected pictures. The picture screen brightness falls off rapidly when viewed from an angle or off side, and it is advisable to arrange your audience in a more or less direct line with the screen.

WHAT'S NEW

(Concluded from page 157)

which the lens is set. The 3-inch Yvar features compactness and light weight, May be focused as close as four feet; calibrated to 100 feet and infinity. May be used on the turret with the wide-angle lens without cutting in on the field. Click stops on both the Switar and the Yvar.

The 15mm Yvar gives a 60 per cent wider field of view than the 1 inch Switar Focuses down to one foot, making it useful for table-top and similar close-up work. Mount designed to act as integral lens hood.

With standard "C" mounts, the Kern lenses may be used with all cameras having threaded lens mounts of this type.

Prices are: Kern Switar Linch f /1.3, \$183.75; Yvar 3-inch f /2.5, \$128.54; Yvar 15mm f /2.8, \$78.75.

New Cameras

Our Itsy-Bitsy Department takes note this month of two new itsy-bitsy cameras, both from Japan; the Steky and the Petal. Both take 160nm film and are small, but tery small.

The Steky measures about 22½x1x1
inches and weighs six ounces. The Petal
is round-shaped, is about the size of a
fifty-cent piece and takes six exposures on
a cartridge. The camera, which selfs for
\$20, can be worn in a coat lapel, on a
key chain, carried in purse or pocket or
concealed in the palm of the hand. The
\$1 cost of the cartridge includes fine-grain
processing of the film and six enlargements.

The Steky was introduced by Albert Levin, who first learned about the camera when he got it during the war from a Japanese officer in exchange for two loaves of bread. The Petal is an import of the Mycro Camera Company, Inc.

At the New York preview for the Steky which sells for \$29.95, complete with metal lens cap, medium yellow filter and eveready leather case, enlargements to \$x7 and 8x10 inches shown as examples of the results obtainable, showed remarkably good definition and projected color trames were satisfactory both as to color quality and image clarity.

The Steky has a 25mm 1/3.5 Stekinar fixed-focus anastigmat lens focusing five teet to infinity, which may be unscrewed from the camera and used in an enlarger; shutter speeds of 1/25th, 1/50th and 1/100th second, and bulb; a direct view finder, and an automatic exposure counter. Daylight-loading cassettes for the Steky hold 24 exposures and may be reloaded with any 16mm film. Black-and-white film having a 40 ASA rating will be supplied by DuPont; color film by Ansco.

The camera is being imported from Japan by Mr. Levin through the American Continental Company, 151 West 28th Street, New York, New York distribution is by the Camera Rooms, 148 West 45th Street.

Another model of the French Monte Carlo cameras is offered by J. L. Galef & Son, Inc., 85 Chambers Street, New York. It is the Monte Carlo Telka III 2½x 3½ folding-type equipped with rangefinder. The coupled rangefinder is combined with an optical viewfinder in one window. Other features are the built-in exposure calculator "Autocal," which automatically indicates the correct f. stop once the shutter has been set; four element coated lens mounted in a ten-speed shutter with built-in flash synchronization and built-in self timer. The price is \$151,58.

In the movie field is a new 8mm magazine loading camera selling for 889.50. It is announced by Franklin photographic Industries, Inc., 223 West Eric Street, Chicago, as the third in a series. The new model, 115-E, is equipped with an 1/2.5 fixed-focus coated lens, optional is the coated i/1.9 fixed-focus lens at \$10 extra.

For camera protection and convenience in carrying. Graflex offers two new Grafley Customcases, one for the 314 x 414 or 4x5 Graphic cameras, the other for the 214 x 314 models. Prices are \$47.50 and \$42.50, respectively. The cases are made of fine quality sole leather, with heavy saddle-stitching and solid brass hardware. All points of strain are rein-forced for sturdiness. The interior, lined with maroon velvet, is designed to take all standard accessories, space being provided for both 5-inch and 7-inch reflectors, battery case, film holders, wide-angle lens on board, film pack adapters, small tools and miscellaneous small items. The detachable carrying strap with shoulder pan encircles the case and may be shortened when carrying the case by the handle.

Lighting

Strobo Research, of Milwaukee, have put speed-light equipment a big step thead by combining the power pack with the lamp housing itself. The new unit is called the Monostrob and gives the photographer the portability and compactness of regular lighting accessories with the special advantages of high speed flash. The price for the flood unit is \$168 plus tax, which includes a 20-inch Alzak Reflector, flash tube, modeling light, yoke, AC cord, trip cord, fuse and instruction manual. The spot unit is \$3 less. The sealed beam Monostrob is \$140 plus tax.

In the field of light stands, some honeys have been placed on the market by American Photographic Instrument Company, 241 West 27th Street, New York. They comprise a new line of Pic Featherlite Stands, made of aircraft aluminum and anodized to produce a permanent and hard surface.

A feature of the stand is that each section when fully extended comes to a positive stop, therefore cannot fall out. The top section cannot drop to the bottom. Precision fitting of sections and sealed air column gives an aircushion effect to prevent lamp accidents. Prices vary from 811.95 for the 18-inch model No. 118, which extends seven feet and weighs one pound, nine ounces, to 814.95 for the 26-inch model extending to 11 feet and weighing two pounds, eight ounces. Other sizes extend to eight and ten feet. The 18-inch model fits into a 4x5 case.

Kalart's Model G Focuspot is announced for the new Grutles Grafite Synchronizer. With a connecting cord for the battery case, the price of the Model G is \$15.25. The Focuspot, in case you are not up on this famous device, is designed to help tecusing under poor light conditions. It operates with the Kalart Model E-3 Prism Range Finder to project twin beams of light on the subject being photographed. When the two beams merge as the result of turning the focusing knob, the subject is in sharp focus.

Darkroom Aids

Kodak announces rubber deep trays in sizes 16 x 20 and 20 x 24 for processing a large number of prints at one time. The first costs \$14.75, the second \$19.60. The straight-sided trays are six inches deep.

Also from Kodak comes news of a Kodak stirring paddle costing 35c. It is made of yellow Tenite, is ten inches long, has an opening for mixing, and a flared handle top for crushing chemicals when preparing solutions.

Enlarging easels can now be ordered custom-made in special sizes starting at \$2.50 by A. J. Ganz Company, 112 North Hayworth Avenue, Hollywood 36. The easels are spotwelded, all-metal construction with thum holes for convenience in inserting paper and matte finish surfaces for focusing. Standard Speed-Ez-Els made by this company are in seven sizes from 2½ x 3½ to 11 x 14 inches.

Multimask (81), a cardboard masking device for making eight 2½ x 3½-inch file prints at one time on an 8 x 10 sheet of paper, is announced by P & V Venture, Box 521, Nyack, N. V. The mask is used



There's a real thrill in store for you when you try the PR-1! And what superb pictures you'll get! Just Press, Set, Read—the meter remembers the rest—gives you correct exposure under all conditions. Incident or reflected light, movies or stills—here's the meter that does everything! No extras to buy. You get it all for \$32.50°. At your photo dealer's. General Electric, Schenectady 5, N. Y.

The meter with a MEMORY Also dependable Type DW-58... \$19.95* and \$21.95* on the baseboard of the enlarger to enlarge small negatives or to reduce larger ones to the 2½ x 3½ size for file purposes.

Color

Emde aluminum Protectochrome slide mounts are being marketed by Emde Products, Inc., 4031 Elenda Street, Culver City, Calif., in two sizes, 2 x 2 and 3 4 x 4 inches, with aperture masks to accommodate twelve picture sizes. The three 2 x 2 masks are for Bantam, single and double frame 35mm slides. The 31x x 4 masks range from 35mm to 314 x 4, with masks for 214 x 314. 214 inch square and 13x x 211. The mount is an aluminum frame, the masks are of die-cut mounting board, the protective covering for the slides is clear Kodapak. Each mask has a red locating oval for correct positioning in the projector.

The Collescope projection screen is in-

troduced by the Collescope Company, 5152 North Sherman Boulevard, Milwaukee, Wis. for rear projection of 35mm slides or 16mm movies. When set up it is a tapered box, with a thin translucent screen at one end and a concealed projector at the other. The strongly lighted image can be seen in normal room illumination. Model A has a 26 x 28-inch screen, weighs 15 pounds, box length 30 inches, and costs \$69.95 for an aluminum box; \$49.95 for a plywood box. Model B, mounted on casters and featuring an extra thin screen, is \$149.95.

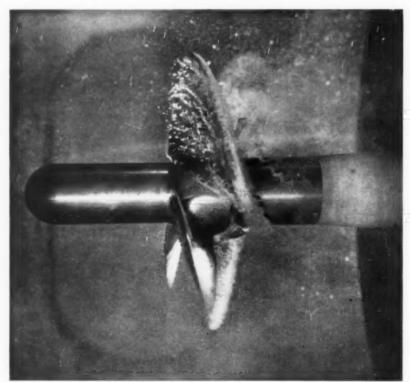
A slide binder at \$4.50 that holds the glass covers in alignment is offered by Compco Corporation, 2251 West St. Paul Avenue, Chicago 47. The hinged vise device handles both 2 x 2 and 3½ x 4 slides and permits quick and easy application of binding tape to the glass edges.

Braquette, Inc., 17 Franklin Street, Lee, Mass., have a new type of mount called Redi-Matte. Any desired mount size, horizontal or vertical, can readily be cut out of the Redi-Matte with a knile or razor. Ruled lines mark the mount for stock picture sizes from 4 x 5 to 11 x 14 inches. The mounts are made of fine eggsheli finish thin white paper to save bulk and come in 16 x 20 size only, packaged in 12 or 50 sheets.

And for the sound movie fans, Forway Corporation, 245 West 55th Street, New York, have the Forway Model 10A 16mm sound projector at \$34\$ complete with lift-off type case which also incorporates the amplifier. This 10-watt Forway features a gear-driven mechanism, f/16 coated lens, optional use of a 750 or 1000-watt projection lamp and projection speeds for sound and silent operation. The projector weighs 27 pounds, has a one-step rewind mechanism, a feature which prevents damage to the film if the loop is lost during projection, and a tension take-up system.

JOURNAL

Technical Section



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U. S. Auty VanKammen

Photographic Plates for Use in Nuclear Physics'

J. H. WEBB †

In 1896, Becquerel discovered that uranium salts emit radiations capable of blackening a photographic plate. In this, the earliest work on radioactivity, the photographic plate was, in fact, about the only means of detecting the radiations from these salts. Later, however, other methods of study, such as the use of scintillations on fluorescent screens, ionization chambers, and the Geiger counter and cloud-chamber techniques, largely replaced the work in this field. The ionization chamber, the Geiger counter, and the Wilson cloud chamber have been developed to a high state of perfection, and there is no question as to the tremendous importance of these tools in past work nor in their continued importance for future work in nuclear research.

The Wilson cloud chamber, introduced in 1911, was the first instrument actually to show the paths of individual particles. However, almost simultaneously, the photographic plate was also shown to be capable of registering the tracks of nuclear particles. In 1910, it was shown by Kinoshita 1 that alpha-particles from naturally radioactive materials would affect a photographic emulsion, and evidence was given to show that the impact of a single alpha-particle was sufficient to make a single grain developable. In 1912, Reinganum² demonstrated that the path of an alpha-particle in an emulsion could be recorded as a line of developable grains. Since this discovery, many workers have made use of the photographic emulsion for the registration of the paths of charged particles and of individual nuclear events. Among the early workers in this field to make valuable contributions, Blau and Wambacher, and Wilkins, are to be especially pointed out. For a summary of all work in this field up to 1941, the reader is referred to the excellent review by Shapiro.3

The photographic plate resembles very closely the cloud chamber in its ability to record individual nuclear events. The cloud chamber has a large chamber filled with a supersaturated vapor. When a charged particle passes through this chamber, a great number of ions are left in its trail and these ions act as nuclei for the condensation of water droplets which are photographed immediately after passage of the particle. Since the cloud chamber is filled with a gas, it has low stopping power and hence the range of the particle is very great. The photographic emulsion consists of millions of tiny silver halide crystals dispersed in gelatin. On passage of a charged particle through this medium, the resulting ionization, produced in the grains, forms latent images in these grains. Thus, the path traversed by the particles in the emulsion is characterized by a thin line of developable grains left in its trail. The photographic emulsion does not give the fine distinction between tracks of different types of particles, nor the possibility of recording the bending of particle tracks in a magnetic

field, as does the cloud-chamber technique. However, because of its higher stopping power, continuous sensitivity, and simplicity, the photographic plate offers certain advantages not possessed by the cloud chamber.

The cloud chamber will record tracks of alphaparticles, deuterons, protons, mesons, and electrons, even up to energy values corresponding to the minimum point of the ionization curves for these particles. Although the photographic plate will also record all these particles. at the present time the most sensitive photographic plates fall a little short of recording particles at the minimum point of ionization. This limits somewhat the recording power for low-mass particles such as the meson and electron that have high velocity even at moderate energies. It is, of course, highly desirable that the photographic plate be pushed to a point where it can record these particles even up to the highest energies. From the progress that has been made in this direction in recent months, it appears that this goal is now within the realm of attainment.

It is the purpose of this paper to describe the present status of the photographic plate for use in nuclear physics and its prospects for the future. A description is given of the mechanism of exposure by charged particles. The composition and structure of present-day nuclear-track plates are discussed and a method is given for calculating the stopping power of the emulsion. The matter of grain spacing along the particle tracks and the factors upon which it depends are discussed. Finally, some examples of tracks obtained on commercial nuclear-track plates are presented to illustrate how the photographic plate registers individual nuclear events.

The Mechanism of Photographic Exposure by Charged Particles; Space Rate of Energy Loss. A charged particle, on passage through any material medium, loses energy at a definite rate per unit distance travelled, depending upon the charge carried by the particle, the velocity of the particle, the number of atoms per cubic centimeter of the stopping material, the atomic number of the stopping atoms, and the average ionization potential of the stopping atoms.

An equation 6, 5, 6, 7 has been derived on theoretical grounds to account for the energy loss per centimeter of path as a function of the factors just given. The equation is given below:

$$-\frac{dE}{dx} - \frac{4\pi e^2(ze)^2N}{mv^2} \left\{ Z \left[\ln \frac{Zmv^2}{I(1-\beta^2)} - \beta^2 \right] - C_K \right\}, \quad (1)$$

in which the terms $(1-\beta^2)$ and (β^2) arise from relativity effects and play a part only at high velocities and

ez = charge of the incident particle;
y = velocity of the incident particle;

N = number of atoms per cc. of stopping material;

Z = atomic number of stopping atoms;

I = average ionization potential of stopping atoms;

m = electron mass;

Presented at PSA Convention, Cincinnati, Ohio, November 6, 1948.
 Kodak Research Laboratories, Rochester, N. Y.

⁺ Kodak Research Laboratories, Rochester, N. Y
PSA JOURNAL, Vol. 15, Mar. 1949

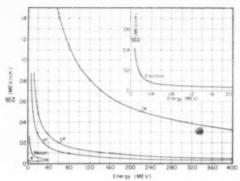


Fig. 1. Curves showing space rate of energy loss for alphaparticles, deuterons, protons, mesons, and electrons in air,

 $\beta = v/c$, c = velocity of light;

C_k = a corrective term which must be applied in case v is comparable with the velocity of the k electron of the stopping atoms but large compared with that of all others.

The principal process by which a particle loses energy on passage through matter consists in the production of one by the interaction of the particle with the electrons of the stopping atoms. From Equation (1) it may be seen that, in the main, the loss of energy varies directly with the square of the charge, $(ze)^2$, inversely with the square of the velocity of the bombarding particle, and directly with the number of electrons per cubic centimeter, (NZ), of the stopping material. The v^2 term appearing in the logarithm introduces only a slow variation with velocity, and the ionization potential. I, remains constant for a given material. The quantity,

$$B = Z \ln \frac{Jmv^{J}}{r} , \qquad (2)$$

is a dimensionless quantity that is referred to as the stopping number of an atom, and the ratio of B for a particular material to $B_{\rm air}$, the stopping number for air, is the relative stopping power of the atom of that material. Thus, the stopping power of a given atom may be designated as,

$$S_{*} = B_{*}B_{***}$$
 (3)

The range-energy curve for a charged particle can be obtained from the energy-loss rate values by means of the integral.

$$R = \int_{-dE/dx}^{E} dE \qquad (4)$$

In Fig. 1 are shown energy-loss curves expressed in Mev (million electron volts) per centimeter of air path for alpha-particles, deuterons, protons, mesons (200 electron masses), and electrons to the same scale. The energy-loss curve for the electron is shown to an enlarged scale in the upper right corner of Fig. 1. It should be pointed out that the energy-loss rate of a charged particle in a given material depends only upon its charge

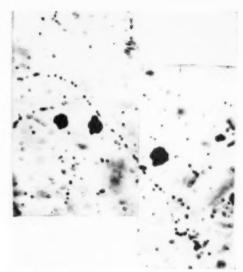


Fig. 2. Electron track of 60μ length (100-Kev energy) in an Eastman NTB emulsion, exposed to beta-particles from Ra D + Ra E.

and velocity. Therefore, curves for particles of unit charge (deuteron, proton, meson, and electron) would be coincident on a diagram in which the abscissa is velocity ** instead of energy. The characteristic shape of the energy-loss rate versus velocity curve declines rapidly with increasing velocity at low velocities, then passes through a broad flat minimum, and finally rises gradually at very high velocities. It is to be noted that the energy-loss rate is high, and thus the ionizing power is high, when the particle velocity is low, and becomes low when the velocity is high. When a charged particle passes within a given distance of an atom, its power to ionize that atom depends upon the time it spends in the neighborhood of the atom. If it is moving swiftly, this time is short, and it therefore delivers very little energy to the atom.

When the energy-loss values are plotted as functions of energy, as shown in Fig. 1, the energy-loss curves for particles of the same charge value are spread out along the energy axis because of the varying mass of the different particles. Thus, particles having equal velocity but different masses will differ in kinetic energy because of their mass difference. It should be pointed out that the minimum energy low value reached by all the curves of Fig. 1 (except the alpha-particle curve) is the same and equal to 0.0023 Mev cm.

The reason for considering the rate of energy-loss curves here is that they bear a close relationship to the mechanism by which charged particles act on a photographic grain to produce developability and are, therefore, of great help in discussing the problem.

[&]quot;
Strictly speaking, $\sqrt{\frac{1}{1-\beta y}}$, where β is the ratio of the velocity of the particle to the velocity of light, re-pertively.

Present Limit of Photographic Sensitivity to Charged Particles

The energy-loss curves of Fig. 1 afford a ready means for showing the relative effects of different types of charged particles on the photographic plate. Also, the threshold sensitivity of the photographic plate can best be designated in terms of the lowest rate of energy loss for which a particle will register as a just-recognizable line of grains. With the best modern nuclear-track plates, this limit is reached with electrons of about 0.1 Mev (100 Kev) energy. The electron track shown in Fig. 2 was recorded on an Eastman NTB emulsion and had a curved-path length in the emulsion of approximately 60 microns. Assuming a stopping power of 2000 for the emulsion relative to air, the equivalent air path of this electron would be 12 cm., which corresponds to an electron of initial energy 100 Kev.

By reference to Fig. 1, it may be seen that an electron of energy 100 Kev corresponds to an energy-loss rate of 0.005 Mev cm., which is about twice the minimum value of the curves, 0.0023 Mev cm., as just stated. The figure 0.005 Mev cm. can be taken as the threshold energy-loss rate for which a charged particle has a fair probability of rendering developable a photographic grain. If this value be applied to each of the other curves of Fig. 1 to determine the maximum energy particle that can be recorded, we find that:

Alpha-particle	>400	Mev
Deuteron	360	Mev
Proton		Mer
Meson (200 Me)		Mex
Electron	0.1	Mey

In passing, it may be interesting to point out that the minimum energy-loss figure, 0.005 Mev cm, for which a photographic grain is made developable, affords a means for determining the minimum number of free ions required to produce the latent image. An energy loss of 0.005 Mev cm, in air corresponds to 15 Mev cm, in silver bromide for which the relative stopping power is 3000. If we assume a grain diameter of 0.3μ (3×10^{-5} cm.), then the energy loss per grain will be $3\times10^{-5}\times15\times10^{6}$ or 450 e.v./grain. From work carried out on photoconductivity of the silver halides under electron exposure, it has been found that about 10 e.v. are required to produce

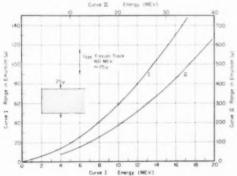


Fig. 3. Range-energy curve for alpha-particles in nuclear-track plate of high AgBr concentration. Drawn for constant stopping power of 1800.

a free electron. Dividing the figure 450 by 10, we obtain 45 as an approximate lower limit for the number of ion pairs per grain required to produce developability of a silver bromide grain of a nuclear-particle emulsion by particle exposure.

Range-Energy Curves for Charged Particles in a Photographic Emulsion

The experimenter using the photographic plate for the registration of charged particles is interested in the path length of the particles in the emulsion as a function of their energy. To illustrate the range-energy relationship for nuclear-track plates of high silver bromide concentration, curves showing range in microns (µ) versus energy in Mev are given for alpha-particles and protons, respectively, in Figs. 3 and 4. The curve shown in Fig. 3 was constructed for a constant stopping power of the emulsion relative to that of air of 1800. This figure was chosen as the basis of the general average of results obtained in tests of Eastman NTA and NTB emulsions exposed to alpha-particles from naturally radioactive elements in the energy range below 9 Mev.

The straight vertical arrow in Fig. 3, marked "U²³⁵ fission track." shows the range obtained by several workers 8,9,10 using photographic emulsions for recording fission tracks. The range 25μ indicated by the arrow corresponds to the full length of the track for both fragments. The short length of the track is due to the very high charge on these particles when they are formed in the fission process.

Also in Fig. 3, a cross-sectional view of an emulsion of 25μ thickness is shown for comparison with the track lengths. From this drawing it is seen that a 25μ emulsion is sufficiently thick to register alpha-particles of moderate energy.

In Fig. 4 is shown a range-energy curve for protons up to 40 Mev. This curve is drawn for a constant stopping-power value of 2000, which figure was chosen from the results of tests on Eastman NTB emulsion exposed to protons of energy below 10 Mev.

In Fig. 4, cross-sectional views of emulsions of thicknesses 25μ , 50μ , and 100μ are shown for purposes of comparison with the proton-track lengths of varying energy. Emulsions up to 100μ thickness are readily available now, and these are required for protons above

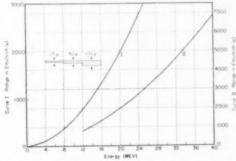


Fig. 4. Range-energy curve for protons in nuclear-track plate of high AgBr concentration. Drawn for constant stopping power of 2000.

10 Mey, energy in order to insure that a good fraction of a track will fall within the angle tolerance limits afforded by this thickness of emulsion.

Commercial Nuclear-Research Emulsions

Nuclear-research emulsions of the type being discussed here are manufactured by the Ilford Company and by Kodak Ltd. in England, and by the Eastman Kodak Company in America.

As typical examples of a variety of emulsions being made for nuclear-particle research, several different types now marketed by the Eastman Kodak Company will be described. These plates are classified under the headings NTA, NTB, and NTC. The general properties and recommended processing conditions for these emulsions are presented in Table I.

It should be pointed out that the NTA and NTB plates can be supplied impregnated with the elements boron, lithium, and beryllium. Such plates are useful for studying particular nuclear reactions in which these elements take part. For example, by bombarding a lithium- or boron-loaded plate with slow neutrons, the following reactions will take place:

the atom of lithium or boron break into two parts, and the two fragment particles fly apart and leave tracks in the emulsion. An example of a lithium atom breaking into a triton (H3) and alpha-particle (2He1) is shown in Fig. 11.

Composition and Stopping Power of Nuclear-Research Emulsions

For certain purposes, it is desirable for the nuclear physicist to have an accurate knowledge of the composition of the photographic emulsion that he uses. All emulsions are essentially mixtures of gelatin and silver bromide. The nuclear-particle emulsions have a relatively much higher percentage of silver bromide than does the normal photographic emulsion. The Eastman NTA and NTB emulsions have the same effective composition, containing about 83 per cent silver halide and 17 per cent gelatin. The NTC plate has about 65 per cent silver halide and 35 per cent gelatin.

For illustration, the actual composition of the Eastman NTA and NTB emulsion, expressed as percentage weight of the dry emulsion, is given in Table II.

If the composition of an emulsion is known, its stopping power can be calculated, provided the atomic stopping powers of the constituent atoms of which it is composed are known. Such a calculation is based on the simple relationship:

$$RNS = R_{iii} N_{iii} S_{iii}, \qquad (5)$$

where R, N, and S refer to the range of the particle in a given material, the number of atoms per cubic centimeter of the stopping material, and the stopping power of the atoms of the material, respectively. The quantities on the right side of Equation (5) refer to the same quantities for the medium of air. From this equation, the stopping power of a given material expressed as the

TABLE I

		Eastman Nuclear Plates		
		Type NTA	Type NTB *	Type NTC
Sendirvity	To nuclear particles	Alpha-particles to 200 Mev Protons to 20 Mev Deuterons to 20 Mev	Alpha-particles to 400 Mev Protons to 100 Mev Deuterons to 200 Mev Mesons to 10 Mev	Nuclear fission fragments of high ionizing power only
	To light, gamma-rays, and beta-rays	low	moderate	very low
Development	To show energy-loss rate by grain spacing	2 minutes at 68°F, in D-19		special instructions
revenjanent	To render tracks very clear for counting	2 minutes at 68° F, in D-8 ** diluted 2:1		special instructions
Recommended fixation		F-3 or 30% hypo	30% hypo	
Emulsion thickness		25 μ regular (to 100 μ on request)	50 μ and 100 μ (process 100 μ by special instructions)	28 _j a
Silver bromide content—per cent weight of dry emulsion		83%	83%	65%
Grain size (approx.)		0,2-0,4 u diam	0.2-0.3 u diam	0.1-0.4 μ diam.

* Recommended for all higher-energy particles of low fonizing power

** To obtain best response to low fonizing particles, such as mesons and electrons, the following alternate development is recommended. Soak in water

5 minutes, develop in D-19 diluted 1 3 for 22 min at 68° F. Fix in 30 per cent hypo for twice the time to clear

ratio of the range of the particle in air to that in the material is:

$$\frac{R_{iii}}{R} = \frac{S}{S_{rir}} \frac{N}{N_{vir}},$$
(6)

or, expressed in terms of density of the materials,

$$\frac{R_{s,r}}{R} = \frac{d}{d_{s,r}} = \frac{A_{s,r}}{A} = \frac{S}{S_{s,r}},$$
 (7)

in which d represents density and A is the atomic weight. If the substance dealt with is a compound, or consists of a fine-grained mixture of substances, the values of S and A used must be the average effective values for the compound, and we obtain;

$$\frac{R_{\rm sir}}{R} = \frac{d \cdot A_{\rm sir} \cdot \overset{\circ}{S} \overset{\circ}{N} \cdot \overset{\circ}{S}_{\rm s}}{a_{\rm sir} \cdot \overset{\circ}{S} \cdot \overset{\circ}{N} \cdot \overset{\circ}{A}_{\rm s}}, \qquad (8)$$

where $N_1, N_2, ..., N_t$ are the numbers of atoms of each type per cubic centimeter, and $S_1, S_2, ..., S_t$ are the respective stopping powers of the different types of atoms. The expression, (8), can be put into a more convenient form as:

$$\frac{R_{\rm vir}}{R} = \frac{d \cdot A_{\rm vir}}{d_{\rm vir}} \left\{ \frac{p_i S_i}{A_i} + \frac{p_i S_i}{A_i} + \cdots \right\} \frac{p_i S_i}{A_i} \,, \tag{9}$$

in which p_t represents the percentage composition by weight of the ah component element and $A_1, A_2, \dots A_t$ represent the atomic weights of these same elements. The stopping power of air S_{air} has been set equal to unity in Equation (9) according to the usual convention.

Calculation ¹¹ of the stopping power by Formula (9) for the Eastman NTB emulsion for an 8.36-Mev proton, for example, gives R_{air} R = 2009, and for a 20-Mev proton, 2065. It may be seen that these figures are in substantial agreement with the figure of 2000 used in plotting the curves of Fig. 4.

Density of Photographic Grains in Tracks of Nuclear Particles

The density of developed grains in a nuclear-particle track recorded by the photographic emulsion is of great importance for the interpretation of the tracks. From the grain spacing, it is frequently possible to recognize directly the type of particle under investigation. For example, the grain spacing, together with the observed small angle scatter, make it possible to distinguish 12 from one another the tracks of a meson and proton. The grain spacing may be assumed to depend upon the rate of energy loss for the different particles as shown in Fig. 1. At points on these curves of equal energy loss, the grain spacing will be substantially the same, regardless of the type of particle. This is true because the action of the incident particle in producing a latent image in the photographic grain is dependent upon the number of ions produced in the individual grain. In this respect, latent-image formation as it occurs with particle radiation is not materially different from that in the case of

It has been well established ^{13,14,15} in the case of exposure to light that the individual photographic grain acts as the unit in exposure. The light quanta strike a silver bromide crystal in succession, and each quantum, upon absorption, raises the energy state of an electron attached

TABLE II

Composition of NTA and NTB Emulsions

lement	Per Cent Weight
A2	47.1
1	1.49
Br.	
C	8.47
H	4 4 9
N	3.06
0	4.80

to a bromide ion into an empty state of the conduction band of silver bromide. An electron occupying an energy level of the conduction band can move about freely in the crystal and can be shifted under the action of an electric field. This has been well verified by experiments on the photoconductance properties of the silver bromide crystal whereby electrical conduction takes place by free electrons under the action of light. An electron freed by light in the crystal moves about until it comes into contact with a so-called sensitivity speck (a small clump of impurity atoms or a distorted place in the crystal) in the grain, where it becomes trapped at a lower energy level, below the conduction band. An electron trapped in this way is surrounded by an electrostatic field which will attract any positive silver ions in the vicinity. Since there are always some mobile silver ions present in the silver bromide crystal, as shown by the property of ionic conductivity, these ions move to the charged specks where they join the electrons to form silver atoms. This process is repeated until a speck of silver is formed large enough to initiate development of that grain.

In exposing grains to high-velocity charged particles, the production of electrons in the grains takes place upon passage of the particle through the grain. Electrons freed by such means will behave, in general, like those produced by exposure to light and may be expected to form a latent image.

The foregoing brief description of the theory of latentimage formations will serve as a basis for considering why the grain spacing in nuclear tracks is different for particles of different charge but with the same velocity and with identical particles having different velocities.

In Fig. 5 are shown schematically an electron revolving about an atom of the stopping material and a charged particle of charge, ze, and velocity, V, passing the atom at a distance, p. The charged particle will exert a force on the electron of the order of magnitude,

$$F = \frac{x^{\circ}}{p^{\circ}} . \tag{10}$$

The impulse given to the electron by the passing charged particle is equal to the product of the force, F, and the time, t, that the particle spends in the neighborhood of the atom. To a first approximation, this time may be taken to be,

$$t = \frac{2v}{v}.$$
 (11)

Thus, the impulse will be.

$$Ft = \frac{ze^2}{m}$$
 (12)



Fig. 5. Schematic diagram to illustrate impulse given to an electron by close passage of a charged particle.

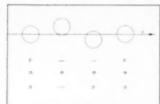


Fig. 6. Schematic diagram to illustrate passage of a charged particle through irregularly distributed photographic

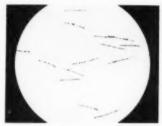


Fig. 7. Tracks of polonium alphaparticles obtained on Eastman NTA Plate.

Consider, now, the impulse given to an electron in the two following cases: (1) by the passage of a proton, and (2) by the passage of an alpha-particle, both of the same range. It is well known that an alpha-particle and a proton of the same velocity have the same range. The alpha-particle, though it has four times the energy of the proton, loses energy at four times the rate of the proton because of its double charge. If the expressions for the impulses in the two cases be equated, we have,

$$\frac{2e^{i}-e^{i}}{p_{0}v-p_{0}v}$$
 (13)

from which we can find the relative distances at which the two impulses are equal, namely,

$$\left(\frac{p_n}{p_n}\right)^2 = 4$$
 (14)

It is obvious that the values of p_0 and p_{11} represent the radii of cylinders of equivalent action of the alpha-particle and proton, respectively. Since the number of atoms contained in such cylinders is also proportional to the P^2 values, it may be expected that, for equal velocities of the two particles, the alpha-particle will ionize approximately four times as many atoms as the protons.

It is similarly known from experiments that protons and deuterons of the same range have initial velocities in the ratio, $V_{tr} = 1.25$. The ratio of the p values in this case will be 1.25; therefore, the number of ions produced by the deuteron will be $(1.25)^2$, or 1.50 times as great as for a proton of the same range.

The threshold sensitivity of a photographic grain may be assumed to depend upon the number of ions produced in the grain. With this basic assumption and using the schematic diagram of Fig. 6, it is possible to explain crudely the grain spacing for different particles. Assume, for example, that a nuclear particle of a given range follows the path shown by the arrow. The path traverses different thicknesses in different grains, which are irregularly distributed in space. Suppose the particle is a proton and of such velocity that it can produce sufficient ions in the grain to form a latent image only if it passes through the full diameter of a grain. Since the path shown passes through the full thickness of the two end grains, the proton would make grains one and four developable. A deuteron of the same range, having lower velocity, and thus somewhat higher ionizing power, will perhaps affect grains one, three, and four. An alphaparticle of the same range, however, having approximately four times higher ionizing power than the proton, will affect all grains in the path, one to four.

Grain density in alpha-particle, deuteron, and proton tracks was measured by Wilkins and St. Helens ¹⁶ for equal residual ranges, and it was found that the grain density in the proton tracks was about one half that of the alpha-particle and that the grain density of the deuteron tracks fell between those of the proton and alpha-particle tracks. Brock and Gardner ¹⁷ also measured the grain density for alpha-particle and deuteron tracks for points of equal residual range and found the grain density for the alpha-particle tracks to be two to four times greater than for the deuteron tracks. These results are all in qualitative agreement with the theory of grain spacing described.

The relative grain densities along the track of an unknown particle and another particle of known mass can be used to determine the mass of the unknown particle. This was done in the case of thez- and u-type mesons studied by Lattes, Occhialini, and Powell.12 The mass of the z-meson (313 Me) was measured by comparison of grain densities in the z-meson track and the proton track. The mass of the µ-meson relative to that of the π-meson was obtained by comparison of the grain densities in these two tracks. To compare the masses of two particles by means of grain densities, the procedure is to find points along the two tracks for which the grain densities are equal; then the relative masses of the two particles will be in the ratio of the two residual paths. or alternatively, in the ratio of the total number of grains in the residual paths. This follows from the fact that particles of equal charge will produce equal grain densities when their velocities are equal, and that the residual paths, or total numbers of residual grains, of two particles having the same velocity will be in the ratio of their masses.

Examples of Nuclear Tracks in the Photographic Emulsion

As illustrations of tracks obtained on commercial nuclear-track plates, the pictures in Figs. 7 to 14 are presented.

The tracks in Fig. 7 were obtained on an Eastman NTA emulsion by exposure to a weak polonium source of alpha-particles placed practically in contact with the photographic emulsion. The polonium alpha-particles have an energy of 5.3 Mev and a range in the emulsion of 22 microns.

Figure 8 shows the paths of two fission fragments from a U²³⁵ atom. An Eastman NTC Plate was impregnated with uranium acetate and bombarded with low-velocity neutrons. The fission of the U²³⁵ atom occurred near the center of the track, and the track itself was produced by the two highly charged fragments flying apart with a combined energy of 160 Mev. The high charge on these fragments is manifested by the relatively short path of these tracks (25µ for both fragments). Also, it is to be noticed that the grain density is highest near the middle of the track and falls off toward the ends as the charge on the fragments and therefore the ionizing power is reduced.

In Fig. 9 is shown the track of a meson obtained by exposure to the mesons produced in the University of California Cyclotron at Berkeley. The exposure was made on an Eastman NTB emulsion. The wide grain spacing in the beginning of the track shows that the particle is moving very fast. The change of grain spacing along the track shows the direction of travel. However, the wavy path shows that the particle is being scattered easily because of its light mass. The fact that it ends in a star shows that it was captured by a positive nucleus and thus probably had a negative charge. It is a so-called \$\pi\$-meson of mass, approximately 300 electron masses.

The star photograph shown in Fig. 10 is a thorium star with five alpha-tracks and one tiny electron track emanating from a single thorium atom. The photographic emulsion in this case was impregnated with a solution of thorium acetate, dried, and set aside for one week. The emulsion was then developed and inspected under the microscope for nuclear-particle tracks. The five heavy tracks shown correspond to the five alpha-particles given up by a single thorium atom in passing through the successive disintegration stages of Ra Th, Th X, Tn, Th A, and Th C.

The single electron corresponds to a slow-speed betaparticle given up by the thorium atom during the beta decay of the thorium atom in either the Th B or Th C" stage.

The long, straight track shown in Fig. 11 illustrates the disintegration of a lithium atom into triton and helium atoms under neutron bombardment. The lithium-impregnated plate was exposed to slow neutrons, then developed, and examined under the microscope. On close inspection, it will be seen that the track can be divided into two parts according to grain density at a point about one fifth from one end, as indicated by the arrow. The part of the track of low grain density is the part corresponding to the triton nucleus, and the heavy short part of the track corresponds to the alpha-particle, or helium nucleus.

In Fig. 12 is shown the decay of a heavy π -meson into a light μ -meson. The π -meson enters at the upper left of



Fig. 8. Track of U^{2,0} fission on Eastman XTC Plate, obtained by impregnating the emulsion with uranium acetate and bombarding it with slow neutrons.

the picture and traverses a short path. It then decays into a light μ -meson and a neutral particle, which does not register. The long, wavy track to the right shows the course of the light meson. This photograph was obtained by exposure to cosmic rays at high altitude.¹⁸

Figure 13 is interesting because of the large number of events appearing in one picture. A heavy, negative π-meson enters the picture at the top right and ends in a star, corresponding to the capture of the meson and the disintegration of an atom of the photographic emulsion. The heavy track going off to the right is an Li⁸ ion that first decayed to Be⁸ with electron emission and then broke into two alpha-particles, giving the hammer-type track. The track going off to the left is a proton that suffered a



Fig. 10. Thorium star showing five alpha-particle tracks and one electron track emanating from a single atom on Eastman NTB Plate.



Fig. 9, Track of heavy π -meson in Eastman NTB emulsion. Track length in emulsion, 350u, ending in star formation. Exposed to mesons in University of California Cyclotron.

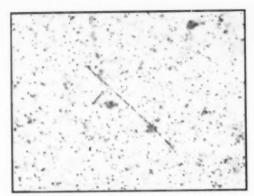


Fig. 11. Track showing disintegration of a lithium atom into triton (H^a) and helium (He^a) atoms by bombardment with neutron. ${}_{1}L^{\alpha}+{}_{2}N^{\alpha}\longrightarrow {}_{3}H^{\alpha}+{}_{4}He^{\alpha}.$



Fig. 13. Tracks of several massial events in single picture. A beavy negative r-meson enters at top right and rods in star. Heavy track going off to right is Lis ion that decayed to Be and then split into two alpha-particles. The track to the left is a proton track showing large angle deflection.

collision and a large angle deflection upward. This picture was made by exposure to mesons created in the University of California Cyclotron.

The star shown in Fig. 14 was initiated by some unknown cosmic-ray particle. The tracks emanating from a single point indicate that a heavy atom of the photographic emulsion (probably silver or bromine) was disintegrated into at least ten fragments by the impact of some type of single high-energy particle. All the tracks observed probably correspond to alpha-particles and protons. This star track was obtained on an Eastman NTB enulsion in a balloon flight at high altitude at the University of Minnesota.

Acknowledgment

In conclusion, the author desires to express appreciation to the Radiation Laboratory of the University of Calitornia for permission to use the picture of the meson track of Fig. 13, and for their co-operation in having exposed the NTB emulsion for the track shown in Fig. 9.

It is a pleasure to thank Dr. E. J. Lofgren, of the University of Minnesota, for his help in sending aloft plates for the high-altitude cosmic-ray exposure shown in Fig. 14.



Fig. 12. Tracks showing decay of a heavy π-meson into a light μ-meson. Photograph from Lattes, Muirhead, Occhialini, and Powell, Nature 159, 694, 1947.

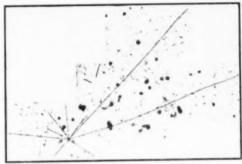


Fig. 14. Cosmic-ray star obtained by exposure of Eastman NTB Plates at high altitude. Star corresponds to disintegration of heavy atom (Ag or Br) of photographic cumbion by high-energy cosmic-ray particle.

The picture of the electron track shown in Fig. 2 and the track of the Li fission shown in Fig. 11 were made by Mr. John Castle and Miss M. J. Wilson, respectively, of the Eastman Kodak Research Laboratories. The author would like to express his thanks to both these workers for their help.

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MANAGEMENT... Your company can use photography in hundreds of ways with much greater efficiency, profit, and prestige. ADVERTISING... Photography is modern advertising's greatest tool.

ENGINEERING . . . Photography is a means of research into formerly inaccessible regions. It is an aid in styling and development of designs—a means of faster and more accurate planning.

RECORDS...All the facts and figures in a filing cabinet are condensed into your pocket or desk drawer through microfilming. TRAINING...In employee-training and orientation the ONLY thorough method is through films.

PRODUCTION . . . Photography will be used in the actual manufacture of every product by 1950.

CONTROL . . . Photography is magic in its ability to detect flaws. It saves lives, time, integrity and money through accurate inspection.

PHOTOGRAPHIC AGE 460 Bloomfield Ave. Montclair, N. J.	NAME TITLE COMPANY ADDRESS	
Please send me PHOTOGRAPHIC AGE	CITYZONE	
☐ for one year at \$5.00 ☐ Check enclosed		

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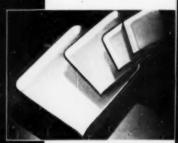


Kodak Electric Time Control



Kodak Utility Footswitch

HOW'S YOUR DARKROOM?



Kodak Enameled Trays



Kodak Combination Funnel

HAVE you taken a real good, recent look at your printing and processing equipment?

How are things? In good repair? Or does the pulse in your timer beat feebly and irregularly? Are your trays chipped and rusted, thermometer missing completely?

Your dealer's stocks of Kodak equipment for processing negatives and prints are more complete now than they have been for some time. Make a list of the things you need to produce your prints in the most efficient, trouble-free manner, and have your dealer bring your darkroom up to date.

You'll find helpful suggestions illustrated here.





Kedek Automatic Tray Siphon



Kodek Derkroom Apron

RODAN 15 A TRADE-MARK



Kodak Thermometers